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PHYSICS · EAPCET (EAMCET)

Ray Optics

Previous Year Questions with answers

202 questions · **142** papers · **2010–2026** · newest paper first

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What is in this PDF: every Ray Optics question we hold from past AP and TS EAPCET (called EAMCET until 2020 in Andhra Pradesh and 2023 in Telangana) papers, with its options and answer. Where an answer comes from a source other than the official final key, it says so next to the answer.

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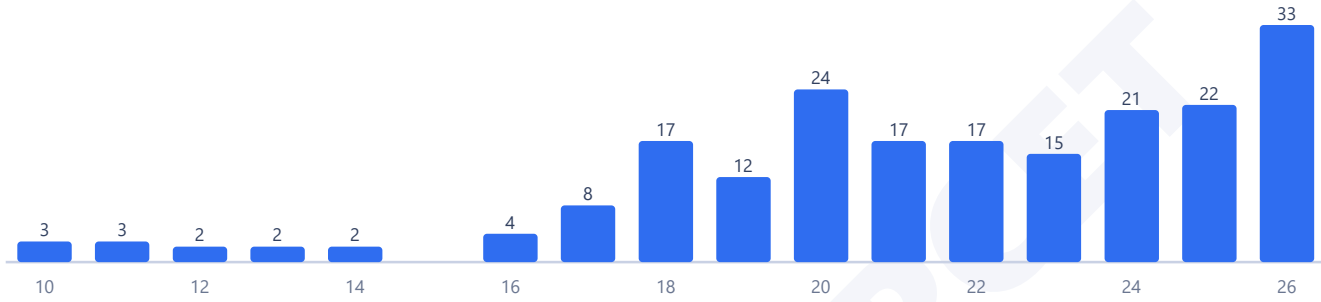
Chapter at a glance

3.5%	202	76 of 77	202 / 0
of Physics questions, 2022–2026	questions, 2010–2026	papers asked it, 2022–2026	MCQ / numerical, 2010–2026

Trend. Rising: 1.7 questions per paper in 2024–2026 against 1 in 2022–2023.

Questions per year



Counts are the questions we hold: 202 in 142 papers. No question in this chapter was found repeated across papers.

Most-asked topics in this chapter (2010–2026)

Lenses	66
Refraction	44
Optical Instruments	37
Prism & Dispersion	33
Reflection & Mirrors	22

How often it comes up

Geometrical optics provides an expansive problem-solving ground within Class 12 physics. In the papers we hold for AP and TS EAPCET from 2022 to 2026, Ray Optics delivered 108 questions across 77 papers (1.4 questions per paper, 3.5% subject share). Looking at our complete archive from 2010 to 2026, the chapter produced 202 questions across 149 papers, maintaining an average of 1.4 questions per paper and a 3.4% subject share. During the earlier period from 2010 to 2021, our archive contains 94 questions across 72 papers (3.3% share). Over the three-year window from 2024 to 2026, it brought 76 questions across 46 papers, claiming a 4.1% share. The share of the subject in the last three years compared to early papers is up, and compared to the recent five-year window it is also up.

State-level distributions indicate higher question density in Telangana papers. Between 2022 and 2026, AP EAPCET papers in our set contributed 60 questions across 48 papers, with 47 papers featuring questions (1.3 per paper, 3.1% share). TS EAPCET contributed 48 questions across 29 papers in our set, with all 29 papers carrying questions (1.7 per paper, 4.1% share). Ray Optics has appeared every year since 2022, though across all 77 recent papers in our collection, one AP paper omitted it, so it was not present in all 77 sittings. The chapter ranks 13th of 28 physics chapters by question share between 2022 and 2026. The busiest single sitting in our collection was 2026, which produced 33 questions across 16 papers.

Most-asked topics

Questions span five primary optics modules:

- **Lenses**: This leading division brought 34 questions between 2022 and 2026, contributing to 66 questions across all years in our archive. It tests the lens maker's formula, thin lens combinations in contact or separated by distance d, silvered lenses, and focal lengths in liquid media.

- **Optical Instruments**: Recent examinations produced 23 questions, out of 37 questions in the complete record. Key topics cover compound microscopes, astronomical telescopes, terrestrial telescopes, normal adjustment, and tube length calculations.
- **Refraction**: A block of 21 questions appeared in the recent five-year span, out of 44 questions overall. It tests Snell's law, real and apparent depth, total internal reflection, critical angles, optical fibers, and refraction at single spherical surfaces.
- **Prism & Dispersion**: Examiners set 18 questions recently, out of 33 questions in the entire archive. Topics include angle of minimum deviation, refractive index formula n = sin[(A + D_m)/two] / sin(A/two), thin prisms, and dispersive power.
- **Reflection & Mirrors**: A pool of 12 questions appeared recently, out of 22 questions across the entire archive. Questions examine concave and convex spherical mirrors, mirror formula, longitudinal magnification, and velocity of image points.

What the questions look like

Lens combinations and immersion problems recur constantly. A classic question determines the change in focal length when a biconvex glass lens of known refractive index is submerged in water or another liquid, requiring students to apply the lens maker's formula 1/f = (n_lens/n_med - 1)(1/R_1 - 1/R_2). Another frequent problem places an object at two different distances from a convex lens to produce real and virtual images of identical magnification, asking for the focal length f.

Optical instrument questions test magnifying power dependencies. Students are asked how the magnification of an astronomical telescope versus a compound microscope changes when the objective lens focal length is increased. For telescopes, magnifying power m = f_o / f_e increases with larger f_o, whereas for compound microscopes m = - (L / f_o)(D / f_e) decreases. Prism questions often specify that the minimum deviation angle equals the apex prism angle A, requiring algebraic solution of the trigonometric ratio sin A = two sin(A/two) cos(A/two).

How to practise it

Start by mastering Cartesian sign conventions for spherical mirrors and thin lenses. The mirror equation is 1/v + 1/u = 1/f with transverse magnification m = - v/u. The thin lens formula is 1/v - 1/u = 1/f with magnification m = + v/u. Differentiating these relations gives longitudinal image velocity: for a mirror v_image = - m^2 v_object, and for a lens v_image = + m^2 v_object.

Next, study refraction at curved boundaries and lenses. For a single spherical interface separating media of refractive indices n_1 and n_2, the relation is n_2/v - n_1/u = (n_2 - n_1)/R. For two thin lenses of focal lengths f_1 and f_2 in contact, equivalent power is P = P_1 + P_2 and 1/F = 1/f_1 + 1/f_2. When separated by distance d in air, the combined focal length satisfies 1/F = 1/f_1 + 1/f_2 - d / (f_1 f_2).

Finally, master optical instruments in normal adjustment. For an astronomical telescope focused at infinity, magnifying power is m = f_o / f_e and barrel tube length is L = f_o + f_e. For a compound microscope with final image formed at the near point D, total magnifying power is m = (v_o / u_o) [1 + D / f_e], with tube length L = v_o + f_e.

Q1 AP EAPCET 2026 · 18 May · Shift 1 MCQ

A convex lens of refractive index $\frac{3}{2}$ has a power of $5\,D$. If it is placed in a liquid of refractive index 2, the new power of the lens is

(A) $2.5\,D$
(B) $1.25\,D$
(C) $-1.25\,D$
(D) $-2.5\,D$

Answer: (D) $-2.5\,D$ · The council's preliminary key

Q2 AP EAPCET 2026 · 18 May · Shift 1 MCQ

A dentist uses a mirror of 24 mm focal length. He views a cavity in the tooth of a patient by holding the mirror at a distance of 16 mm from the cavity. The magnification is

(A) 2
(B) 3
(C) 1
(D) 1.5

Answer: (B) 3 · The council's preliminary key

Q3 AP EAPCET 2026 · 18 May · Shift 2 MCQ

If a person cannot see objects closer than $100cm$, the power of lens required to read at $25cm$ is

(A) $+3D$
(B) $-3D$
(C) $+4D$
(D) $-4D$

Answer: (A) $+3D$ · The council's preliminary key

Q4 AP EAPCET 2026 · 18 May · Shift 2 MCQ

A compound microscope consists of an objective lens of focal length $f_o = 1$ cm and an eyepiece of focal length $f_e = 5$ cm. An object is placed 1.2 cm in front of the objective. The final image is formed at the least distance of distinct vision. The nature of the intermediate image and the total magnification of the microscope are:

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(A) Real, inverted; Magnification $= -50$
(B) Virtual, inverted; Magnification $= 30$
(C) Virtual, erect; Magnification $= 50$
(D) Real, inverted; Magnification $= -30$

Answer: (D) Real, inverted; Magnification $= -30$ · The council's preliminary key

Q5 AP EAPCET 2026 · 15 May · Shift 1 MCQ

Convex lens of focal length $20\ cm$ and a concave lens of focal length of $30\ cm$ are separated by a distance of $10\ cm$. Equivalent power of this arrangement is

(A) $1.67\ D$
(B) $2.5\ D$
(C) $3.33\ D$
(D) $5.1\ D$

Answer: (C) $3.33\ D$ · The council's preliminary key

Q6 AP EAPCET 2026 · 15 May · Shift 1 MCQ

A rectangular glass block of thickness $10\ cm$ and refractive index 1.5 is placed over a small coin. A beaker is filled with water of refractive index $\frac{4}{3}$ to a height of $10\ cm$ and placed over glass block. The apparent depth of coin when viewed at near normal incidence

(A) $3.3\ cm$
(B) $5.8\ cm$
(C) $12.0\ cm$
(D) $14.2\ cm$

Answer: (D) $14.2\ cm$ · The council's preliminary key

Q7 AP EAPCET 2026 · 15 May · Shift 2 MCQ

An object is 20 cm away from a concave mirror with focal length 15 cm. If the object moves with a speed of $5\ \mathrm{ms}^{-1}$ along the axis, then the speed of the image will be

(A) $45\ \mathrm{m\ s}^{-1}$
(B) $27\ \mathrm{m\ s}^{-1}$
(C) $9\ \mathrm{m\ s}^{-1}$
(D) $10\ \mathrm{m\ s}^{-1}$

Answer: (A) $45\ \mathrm{m\ s}^{-1}$ · The council's preliminary key

Q8 AP EAPCET 2026 · 15 May · Shift 2 MCQ

In a compound microscope, the focal lengths of two lenses are 1.5 cm and 6.25 cm. An object is placed at 2 cm from objective and final image is formed at 25 cm from eye lens. The distance

between two lenses is

(A) 6.00 cm
(B) 7.75 cm
(C) 9.25 cm
(D) 11.00 cm

Answer: (D) 11.00 cm · The council's preliminary key

Q9 AP EAPCET 2026 · 14 May · Shift 1 MCQ

An object is placed at a distance of 15cm from a convex lens of focal length 10cm. On the other side of the lens, at its focus a convex mirror is placed such that final image formed coincides with the object. The focal length of convex mirror is

(A) 20 cm
(B) 10 cm
(C) 15 cm
(D) 30 cm

Answer: (B) 10 cm · The council's preliminary key

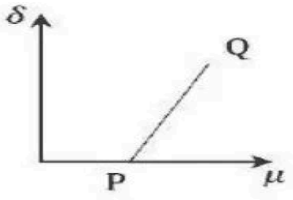
Q10 AP EAPCET 2026 · 14 May · Shift 1 MCQ

For a prism of angle 5°, the angle of minimum deviation (δ) varies with the refractive index (μ) as shown in the graph. The slope of the graph is

(see the figure above)

For a prism of angle 5°, the angle of minimum deviation (δ) varies with the refractive index (μ) as shown in the graph. The slope of the graph is

కోణము 5° గల ఒక పట్టకం యొక్క పట్టక పదార్థ వక్రీభవన గుణకంతో, కనిష్ఠ విచలన కోణం (δ) లో కలిగే మార్పు గ్రాఫులో చూపబడినది. ఈ గ్రాఫు యొక్క వాలు



Options :

1. 5°
2. $5\ rad$
3. 0.5°
4. $0.5\ rad$

(A) 5°
(B) $5\ rad$
(C) 0.5°
(D) $0.5\ rad$

Answer: (A) 5° · The council's preliminary key

Q11 AP EAPCET 2026 · 14 May · Shift 2 MCQ

A Convex lens forms a real image 4 cm long on a screen. When the lens is shifted to a new position without disturbing the object, again a real image is formed on the screen which is 16 cm tall. The length of the object must be

(A) 4 cm
(B) 8 cm
(C) 12 cm
(D) 20 cm

Answer: (B) 8 cm · The council's preliminary key

Q12 AP EAPCET 2026 · 14 May · Shift 2 MCQ

A Vessel of depth x is half filled with oil of refractive index μ_1 and the other half is filled with water of refractive index μ_2. The apparent depth of the vessel when viewed from above is

(A) $\frac{x(\mu_1+\mu_2)}{2\mu_1\mu_2}$
(B) $\frac{x\mu_1\mu_2}{2(\mu_1+\mu_2)}$
(C) $\frac{2x\mu_1\mu_2}{(\mu_1+\mu_2)}$
(D) $\frac{2x(\mu_1+\mu_2)}{\mu_1\mu_2}$

Answer: (A) $\frac{x(\mu_1+\mu_2)}{2\mu_1\mu_2}$ · The council's preliminary key

Q13 AP EAPCET 2026 · 13 May · Shift 1 MCQ

The refractive index of water is $\frac{4}{3}$ and that of glass is $\frac{3}{2}$. The refractive index of glass with respect to water is

(A) 9/8
(B) 8/9
(C) 6/4
(D) 2.0

Answer: (A) 9/8 · The council's preliminary key

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Q14 AP EAPCET 2026 · 13 May · Shift 1 MCQ

For the same angle of incidence, the angles of refraction of light ray in different media A, B, C are $35^\circ, 25^\circ, 15^\circ$. If V_A, V_B, V_C are velocities of light in A, B, C media respectively, then

(A) $V_A = V_B = V_C = 0$
(B) $V_A = V_B = V_C$
(C) $V_A > V_B > V_C$
(D) $V_A < V_B < V_C$

Answer: (C) $V_A > V_B > V_C$ · The council's preliminary key

Q15 AP EAPCET 2026 · 13 May · Shift 2 MCQ

A glass slab has a critical angle of 30° when placed in air. What will be the critical angle when it is placed in a liquid of refractive index 6/5? $\left(\sin 53^\circ = \frac{4}{5}\right)$

(A) 45°
(B) 37°
(C) 53°
(D) 60°

Answer: (B) 37° · The council's preliminary key

Q16 AP EAPCET 2026 · 13 May · Shift 2 MCQ

An object is placed at 10 cm from a lens and a real image is formed with magnification of 0.5. The lens is

(A) Concave with focal length of $\frac{10}{3}$ cm
(B) Convex with focal length of $\frac{10}{3}$ cm
(C) Concave with focal length of 10 cm
(D) Convex with focal length of 10 cm

Answer: (B) Convex with focal length of $\frac{10}{3}$ cm · The council's preliminary key

Q17 AP EAPCET 2026 · 12 May · Shift 1 MCQ

If the focal length of objective lens is increased, then the magnifying power of

(A) Microscope decreases, Telescope increases
(B) Microscope increases, Telescope decreases
(C) Microscope increases, Telescope increases
(D) Microscope decreases, Telescope decreases

Answer: (A) Microscope decreases, Telescope increases · The council's preliminary key

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Q18 AP EAPCET 2026 · 12 May · Shift 1 MCQ

The angle of prism is equal to the angle of minimum deviation for a prism of refractive index 1.5. Then the value of angle of the prism is

(A) $\cos^{-1}\left(\frac{3}{4}\right)$
(B) $2\cos^{-1}\left(\frac{3}{4}\right)$
(C) $\cos^{-1}\left(\frac{3}{2}\right)$
(D) $2\cos^{-1}\left(\frac{3}{2}\right)$

Answer: (B) $2\cos^{-1}\left(\frac{3}{4}\right)$ · The council's preliminary key

Q19 AP EAPCET 2026 · 12 May · Shift 2 MCQ

A convex lens forms a real image and a virtual image of same size of an object placed separately at distances u_1 and u_2 respectively from the lens. Then the focal length of the lens is

(A) $\frac{\sqrt{u_1 u_2}}{2}$
(B) $\left(\frac{u_1+u_2}{2}\right)$
(C) $\sqrt{u_1 u_2}$
(D) $2\left(u_1+u_2\right)$

Answer: (B) $\left(\frac{u_1+u_2}{2}\right)$ · The council's preliminary key

Q20 AP EAPCET 2026 · 12 May · Shift 2 MCQ

'n' transparent films, each of refractive index 1.5 with thickness $1\ cm, 2cm, 3\ cm, \ldots n\ cm$ are placed one over the other. When a point object is seen normally through this combination, the object is found to be shifted by $5\ cm$. Then the value of 'n' is

(A) 3
(B) 4
(C) 5
(D) 6

Answer: (C) 5 · The council's preliminary key

Q21 TS EAPCET 2026 · 11 May · Shift 1 MCQ

A point object is moving towards a concave mirror of focal length 20 cm along the principal axis with a uniform speed of $4\ \mathrm{cms}^{-1}$. The speed of the image when the object is at a distance of 60 cm from the mirror is

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(A) $3\ \text{cms}^{-1}$
(B) $1\ \text{cms}^{-1}$
(C) $2\ \text{cms}^{-1}$
(D) $4\ \text{cms}^{-1}$

Answer: (B) $1\ \text{cms}^{-1}$ · The council's preliminary key

Q22 TS EAPCET 2026 · 11 May · Shift 1 MCQ

If the focal lengths of the objective and eyepiece of a giant refracting telescope are 20 m and 1 cm respectively, then the angular magnification of the telescope is

(A) 5
(B) 500
(C) 20
(D) 2000

Answer: (D) 2000 · The council's preliminary key

Q23 TS EAPCET 2026 · 11 May · Shift 2 MCQ

If the angles of minimum deviation when a prism of angle 80° is placed separately in air and in a liquid are 40° and 10° respectively, then the refractive index of the liquid is

(A) $\sqrt{3}$
(B) $\sqrt{\frac{3}{2}}$
(C) $\sqrt{\frac{2}{3}}$
(D) $\sqrt{2}$

Answer: (B) $\sqrt{\frac{3}{2}}$ · The council's preliminary key

Q24 TS EAPCET 2026 · 11 May · Shift 2 MCQ

A card divided into squares each of size $1\ \text{mm}^2$ is viewed through a magnifying glass of focal length $10\ \text{cm}$ which is held close to the eye. The distance at which the lens is to be placed from the card to view the squares with maximum possible magnification is

(A) $20\ \text{cm}$
(B) $16.67\ \text{cm}$
(C) $10\ \text{cm}$
(D) $7.14\ \text{cm}$

Answer: (D) $7.14\ \text{cm}$ · The council's preliminary key

Q25 TS EAPCET 2026 · 10 May · Shift 1 MCQ

Two plane mirrors A and B are placed parallel to each other with a separation of 2 m between them. If an object is placed in between the two mirrors at a distance of 60 cm from the mirror B, then the distance of the second nearest image seen in mirror B from mirror A is
(The reflecting surfaces of the two mirrors face each other)

(A) 3.4 m
(B) 5.4 m
(C) 2.6 m
(D) 4.6 m

Answer: (B) 5.4 m · The council's preliminary key

Q26 TS EAPCET 2026 · 10 May · Shift 1 MCQ

If the length of a compound microscope is 100 cm and the focal length of its objective is 5 cm, then the difference between the magnifications of the microscope when the final image forms at infinity and at near point is
(Least distance of distinct vision = 25 cm)

(A) 24
(B) 15
(C) 12
(D) 20

Answer: (D) 20 · The council's preliminary key

Q27 TS EAPCET 2026 · 10 May · Shift 2 MCQ

When an object is placed at a distance of 40 cm from a convex lens, a real image is formed at a distance V from the lens. If the convex lens is replaced with a concave lens of same focal length, then the change in the position of the image is

(A) $\frac{V(V-40)}{(V-20)}$ cm
(B) $\frac{V(V+40)}{(V-20)}$ cm
(C) $\frac{V(V-40)}{(V+20)}$ cm
(D) $\frac{V(V+40)}{(V+20)}$ cm

Answer: (D) $\frac{V(V+40)}{(V+20)}$ cm · The council's preliminary key

Q28 TS EAPCET 2026 · 10 May · Shift 2 MCQ

Keeping the length of an astronomical telescope constant in normal adjustment, to increase its magnification from 4 to 9, the focal length of the eyepiece is to be decreased by 10 cm. The length of the telescope is

(A) 150 cm
(B) 120 cm
(C) 80 cm
(D) 100 cm

Answer: (D) 100 cm · The council's preliminary key

Q29 TS EAPCET 2026 · 9 May · Shift 1 MCQ

A point object is at rest on the principal axis at a distance of 20 cm from a concave mirror of radius of curvature 30 cm. Under the action of a horizontal force, the object moves away from the mirror along the axis and reaches a distance of 40 cm from the mirror in a time of 3 s. The acceleration of the image is

(A) $8\ \mathrm{cm\,s^{-2}}$
(B) $4\ \mathrm{cm\,s^{-2}}$
(C) $16\ \mathrm{cm\,s^{-2}}$
(D) $12\ \mathrm{cm\,s^{-2}}$

Answer: (A) $8\ \mathrm{cm\,s^{-2}}$ · The council's preliminary key

Q30 TS EAPCET 2026 · 9 May · Shift 1 MCQ

The ratio of the speeds of light in a prism P and in vacuum is $1 : \sqrt{3}$ and the angle of minimum deviation is 60°. In another prism Q of same angle of prism, if the angle of minimum deviation is 30°, then the refractive index of the material of the prism Q is

(A) $\sqrt{2.5}$
(B) $\sqrt{1.5}$
(C) $\sqrt{3}$
(D) $\sqrt{2}$

Answer: (D) $\sqrt{2}$ · The council's preliminary key

Q31 TS EAPCET 2026 · 9 May · Shift 1 MCQ

The objective of a microscope is immersed in a liquid of refractive index 1.5. If the semi-vertical angle (half of the vertex angle) of the cone of light rays of wavelength 600 nm from the object that fall on the objective is 30°, then the minimum resolvable distance for this microscope is

(A) 610 nm
(B) 366 nm
(C) 488 nm
(D) 244 nm

Answer: (C) 488 nm · The council's preliminary key

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Q32 TS EAPCET 2026 · 9 May · Shift 2 MCQ

When a thin convex lens is immersed in a liquid of refractive index 1.2, the focal length of the lens becomes 48 cm. If the ratio of the radii of the curvature of the lens is 2:3 and the refractive index of the material of the lens is 1.5, then the radii of curvature of the lens are

(A) 20 cm, 30 cm
(B) 10 cm, 15 cm
(C) 08 cm, 12 cm
(D) 16 cm, 24 cm

Answer: (A) 20 cm, 30 cm · The council's preliminary key

Q33 TS EAPCET 2026 · 9 May · Shift 2 MCQ

In an astronomical telescope of 135 cm length kept in normal adjustment, if the difference between the focal lengths of the objective and eyepiece is 125 cm, then the magnification of the telescope is

(A) 13.5
(B) 12.5
(C) 26
(D) 28

Answer: (C) 26 · The council's preliminary key

Q34 AP EAPCET 2025 · 27 May · Shift 1 MCQ

A ray of light incidents at an angle of 60° on the first face of a prism. The angle of the prism is 30° and its second face is silvered. If the light ray inside the prism retraces its path after reflection from the second face, then the refractive index of the material of the prism is

(A) $\frac{2}{\sqrt{3}}$
(B) $\frac{3}{2}$
(C) $\sqrt{2}$
(D) $\sqrt{3}$

Answer: (D) $\sqrt{3}$ · The council's preliminary key

Q35 AP EAPCET 2025 · 26 May · Shift 1 MCQ

According to Rayleigh, when sunlight travels through atmosphere, the amount of scattering is proportional to n^{th} power of wavelength of light. Then the value of 'n' is

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(A) 4
(B) -4
(C) 3
(D) -3

Answer: (B) -4 · The council's preliminary key

Q36 AP EAPCET 2025 · 26 May · Shift 2 MCQ

When an object is placed infront of a convex mirror at a distance 'u' from the pole of the mirror such that the size of the image is 'n' times that of the object, then the object distance 'u' =

(A) $\frac{f}{n^2} - nf$
(B) $nf - \frac{f}{n}$
(C) $f - \frac{f}{n}$
(D) $f + \frac{f}{n^2}$

Answer: (C) $f - \frac{f}{n}$ · The council's preliminary key

Q37 AP EAPCET 2025 · 24 May · Shift 1 MCQ

The ratio of the focal lengths of a convex lens when kept in air and when it is immersed in a liquid is 1 : 2. If the refractive index of the material of the lens is 1.5, then the refractive index of the liquid is

(A) 1.20
(B) 1.30
(C) 1.25
(D) 1.35

Answer: (A) 1.20 · The council's preliminary key

Q38 AP EAPCET 2025 · 23 May · Shift 1 MCQ

A light ray falls on a rectangular glass slab as shown in the figure. If total internal reflection occurs at the vertical face of the slab at point B, the refractive index of glass is

(see the figure above)

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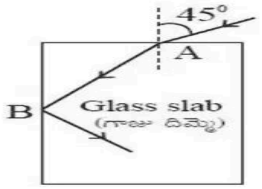
A light ray falls on a rectangular glass slab as shown in the figure. If total internal reflection occurs at the vertical face of the slab at point B, the refractive index of glass is

పటంలో చూపిన విధంగా ఒక దీర్ఘచతురస్రాకారపు గాజు దిమ్మెపై ఒక కాంతి కిరణం పతనమైనది. దిమ్మె నిలువుతలంలో బిందువు B వద్ద కాంతి సంపూర్ణాంతర పరావర్తనం చెందితే, గాజు వక్రీభవన గుణకం



Options :

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

(A) $\sqrt{\frac{3}{2}}$

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

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

(D) $\frac{\sqrt{5}}{2}$

Answer: (A) $\sqrt{\frac{3}{2}}$ · The council's preliminary key

Q39 AP EAPCET 2025 · 23 May · Shift 2 MCQ

If the least distance of distinct vision for a boy is 35 cm, then the lens to be used by the boy for correcting the defect of his eye is

(A) convex lens of focal length 35 cm

(B) concave lens of focal length 35 cm

(C) convex lens of focal length 87.5 cm

(D) concave lens of focal length 87.5 cm

Answer: (C) convex lens of focal length 87.5 cm · The council's preliminary key

Q40 AP EAPCET 2025 · 22 May · Shift 1 MCQ

A light ray incidents on an equilateral prism made of material of refractive index $\sqrt{3}$. Inside the prism, if the light ray moves parallel to the base of the prism, then the angle of incidence of the light ray is

(A) 30°
(B) 45°
(C) 75°
(D) 60°

Answer: (D) 60° · The council's preliminary key

Q41 AP EAPCET 2025 · 22 May · Shift 2 MCQ

Images of same size are formed by a convex lens when an object is placed either at 20 cm or 10 cm distance from the lens. The focal length of the lens is

(A) 12 cm
(B) 40 cm
(C) 18 cm
(D) 15 cm

Answer: (D) 15 cm · The council's preliminary key

Q42 AP EAPCET 2025 · 21 May · Shift 1 MCQ

If the far point of a short sighted person is 400 cm, then the power of the lens required to enable him to see very distant objects clearly is

(A) -0.5 D
(B) $+0.5$ D
(C) $+0.25$ D
(D) -0.25 D

Answer: (D) -0.25 D · The council's preliminary key

Q43 AP EAPCET 2025 · 21 May · Shift 2 MCQ

Two thin convex lenses are kept in contact coaxially. If the focal length of the combination of the lenses is 4 cm and sum of the focal lengths of the two lenses is 18 cm, then the focal length of the lens of low power is

(A) 8 cm
(B) 10 cm
(C) 6 cm
(D) 12 cm

Answer: (D) 12 cm · The council's preliminary key

Q44 TS EAPCET 2025 · 4 May · Shift 1 MCQ

If the distances of the object and its real image from the principal focus of a concave mirror are 16 cm and 9 cm respectively, then the focal length of the mirror is

(A) 30 cm
(B) 12 cm
(C) 18 cm
(D) 24 cm

Answer: (B) 12 cm · The council's preliminary key

Q45 TS EAPCET 2025 · 4 May · Shift 1 MCQ

If the angle of minimum deviation produced by an equilateral prism is equal to the angle of the prism, then the refractive index of the material of the prism is nearly

(A) 1.515
(B) 1.414
(C) 1.732
(D) 1.625

Answer: (C) 1.732 · The council's preliminary key

Q46 TS EAPCET 2025 · 4 May · Shift 2 MCQ

A straight metal rod of length 6 cm is placed along the principal axis of a concave mirror of focal length 9 cm such that the end of the rod closer to the mirror is at a distance of 15 cm from the pole of the mirror. The length of the image of the rod is

(A) 6 cm
(B) 12 cm
(C) 8.75 cm
(D) 6.75 cm

Answer: (D) 6.75 cm · The council's preliminary key

Q47 TS EAPCET 2025 · 4 May · Shift 2 MCQ

A ray of light incidents at an angle of 9.3° on one face of a small angle prism of refracting angle 6°. If the ray of light emerges normally from the second face, the refractive index of the material of the prism is

(A) 1.40
(B) 1.45
(C) 1.55
(D) 1.50

Answer: (C) 1.55 · The council's preliminary key

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Q48 TS EAPCET 2025 · 3 May · Shift 1 MCQ

An object of height 3.6 cm is placed normally on the principal axis of a concave mirror of radius of curvature 30 cm. If the object is at a distance of 10 cm from the principal focus of the mirror, then the height of the real image formed due to the mirror is

(A) 5.4 cm
(B) 3.6 cm
(C) 1.8 cm
(D) 2.7 cm

Answer: (A) 5.4 cm · The council's preliminary key

Q49 TS EAPCET 2025 · 3 May · Shift 1 MCQ

Monochromatic light of wavelength 6000 Å incidents on a small angled prism. If the angle of the prism is 6°, the refractive indices of the material of the prism for violet and red lights are respectively 1.52 and 1.48, then the angle of dispersion produced for this incident light is

(A) 30°
(B) 36°
(C) 24°
(D) 0°

Answer: (D) 0° · The council's preliminary key

Q50 TS EAPCET 2025 · 3 May · Shift 2 MCQ

A Cassegrain telescope uses two mirrors of radii of curvature 25 cm and 16 cm separated by a distance of 2.5 cm. The position of the final image of an object at infinity is

(A) 40 cm from convex mirror
(B) 4.44 cm from concave mirror
(C) 4.44 cm from convex mirror
(D) 40 cm from concave mirror

Answer: (A) 40 cm from convex mirror · The council's preliminary key

Q51 TS EAPCET 2025 · 3 May · Shift 2 MCQ

A convex lens of radii of curvature 6 cm and 12 cm is immersed in a liquid of refractive index 1.3. If the refractive index of the material of the lens is 1.5, then the focal length of the lens when immersed in the liquid is

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(A) 39 cm
(B) 13 cm
(C) 26 cm
(D) 52 cm

Answer: (C) 26 cm · The council's preliminary key

Q52 TS EAPCET 2025 · 2 May · Shift 1 MCQ

The angle of a prism made of a material of refractive index $\sqrt{2}$ is 90°. The angle of incidence for a light ray on the first face of the prism such that the light ray suffers total internal reflection at the second face is

(A) 0°
(B) 90°
(C) 60°
(D) 45°

Answer: (B) 90° · The council's preliminary key

Q53 TS EAPCET 2025 · 2 May · Shift 1 MCQ

The total magnification produced by a compound microscope is 24 when the final image is formed at the least distance of distinct vision. If the focal length of the eyepiece is 5 cm, the magnification produced by the objective is

(A) 4
(B) 4.8
(C) 120
(D) 6

Answer: (A) 4 · The council's preliminary key

Q54 TS EAPCET 2025 · 2 May · Shift 2 MCQ

A compound microscope has an objective of focal length 1.25 cm and an eyepiece of focal length 5 cm separated by a distance of 7.5 cm. The total magnification produced by the microscope when the final image forms at infinity is

(A) 6.25
(B) 30
(C) 120
(D) 72.5

Answer: (B) 30 · The council's preliminary key

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Q55 TS EAPCET 2025 · 2 May · Shift 2 MCQ

The property of light that explains the formation of coloured images due to thick lenses is

(A) Refraction
(B) Dispersion
(C) Reflection
(D) Total internal reflection

Answer: (B) Dispersion · The council's preliminary key

Q56 AP EAPCET 2024 · 23 May · Shift 1 MCQ

When a convex lens is immersed in two different liquids of refractive indices 1.25 and 1.5, the ratio of the focal lengths of the lens is 5: 16. The refractive index of the material of the lens is

(A) 1.55
(B) 1.5
(C) 1.65
(D) 1.6

Answer: (C) 1.65 · The council's preliminary key

Q57 AP EAPCET 2024 · 22 May · Shift 1 MCQ

A person can see objects clearly when they lie between 40 cm and 400 cm from his eye. In order to increase the maximum distance of distant vision to infinity, the type of lens and power of correction lens required respectively are

(A) Convex, 0.25 Diapter
(B) Concave, − 0.25 Diapter
(C) Concave, − 0.5 Diapter
(D) Convex, 0.5 Diapter

Answer: (B) Concave, − 0.25 Diapter · The council's preliminary key

Q58 AP EAPCET 2024 · 22 May · Shift 2 MCQ

When a convex lens is immersed in a liquid of refractive index equal to 80% of the refractive index of the material of the lens, the focal length of the lens increases by 100%. The refractive index of the liquid is

(A) 1.27
(B) 1.2
(C) 1.33
(D) 1.4

Answer: (B) 1.2 · The council's preliminary key

Q59 AP EAPCET 2024 · 21 May · Shift 1 MCQ

A ray of light travels from an optically denser to rarer medium. The critical angle for the two media is 'C'. The maximum possible deviation of the ray will be

(A) $\frac{\pi}{2} - C$
(B) $2C$
(C) $\pi - 2C$
(D) $\pi - C$

Answer: (C) $\pi - 2C$ · The council's preliminary key

Q60 AP EAPCET 2024 · 21 May · Shift 2 MCQ

The focal length of the objective lens of a telescope is 30 cm and that of its eye lens is 3 cm. It is focussed on a scale at a distance 2 m from it. The distance of objective lens from eye lens to see the clear image is

(A) 38.3 cm
(B) 48.3 cm
(C) 58.3 cm
(D) 22.5 cm

Answer: (A) 38.3 cm · The council's preliminary key

Q61 AP EAPCET 2024 · 20 May · Shift 1 MCQ

An object lying 100 cm inside water is viewed normally from air. If the refractive index of water is $\frac{4}{3}$, then the apparent depth of the object is

(A) 100 cm
(B) 50 cm
(C) 25 cm
(D) 75 cm

Answer: (D) 75 cm · The council's preliminary key

Q62 AP EAPCET 2024 · 20 May · Shift 2 MCQ

An object is placed at a distance of 18 cm in front of a mirror. If the image is formed at a distance of 4 cm on the other side, then focal length, nature of the mirror and nature of image are respectively

(A) 3.14 cm, concave mirror and real image
(B) 3.14 cm, convex mirror and real image
(C) 5.14 cm, convex mirror and virtual image
(D) 5.14 cm, concave mirror and virtual image

Answer: (C) 5.14 cm, convex mirror and virtual image · The council's preliminary key

Q63 AP EAPCET 2024 · 20 May · Shift 2 MCQ

If a microscope is placed in air, the minimum separation of two objects seen as distinct is 6 μm. If the same is placed in a medium of refractive index 1.5, then the minimum separation of the two objects to see as distinct is

(A) 4 μm
(B) 6 μm
(C) 3 μm
(D) 9 μm

Answer: (A) 4 μm · The council's preliminary key

Q64 AP EAPCET 2024 · 19 May · Shift 2 MCQ

The minimum deviation produced by a hollow prism filled with a certain liquid is found to be 30°. The light ray is also found to be refracted at an angle of 30°. Then the refractive index of the liquid is

(A) $\sqrt{2}$
(B) $\sqrt{3}$
(C) $\sqrt{\frac{3}{2}}$
(D) $\frac{3}{2}$

Answer: (A) $\sqrt{2}$ · The council's preliminary key

Q65 AP EAPCET 2024 · 18 May · Shift 1 MCQ

The focal length of a thin converging lens in air is 20 cm. When the lens is immersed in a liquid, it behaves like a concave lens of power 1 D. If the refractive index of the material of the lens is 1.5, the refractive index of the liquid is

(A) $\frac{5}{3}$
(B) $\frac{4}{3}$
(C) $\frac{5}{4}$
(D) $\frac{7}{4}$

Answer: (A) $\frac{5}{3}$ · The council's preliminary key

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Q66 TS EAPCET 2024 · 11 May · Shift 1 MCQ

An object placed at a distance of 24 cm from a concave mirror forms an image at a distance of 12 cm from the mirror. If the object is moved with a speed of $12\ \mathrm{ms}^{-1}$, then the speed of the image is

(A) $24\ \mathrm{ms}^{-1}$
(B) $3\ \mathrm{ms}^{-1}$
(C) $6\ \mathrm{ms}^{-1}$
(D) $12\ \mathrm{ms}^{-1}$

Answer: (B) $3\ \mathrm{ms}^{-1}$ · The council's preliminary key

Q67 TS EAPCET 2024 · 11 May · Shift 1 MCQ

When the object and the screen are 90 cm apart, it is observed that a clear image is formed on the screen when a convex lens is placed at two positions separated by 30 cm between the object and the screen. The focal length of the lens is

(A) 21.4 cm
(B) 20 cm
(C) 30 cm
(D) 30.8 cm

Answer: (B) 20 cm · The council's preliminary key

Q68 TS EAPCET 2024 · 10 May · Shift 1 MCQ

When an object of height 12 cm is placed at a distance from a convex lens, an image of height 18 cm is formed on a screen. Without changing the positions of the object and the screen, if the lens is moved towards the screen, another clear image is formed on the screen. The height of this image is

(A) 4 cm
(B) 6 cm
(C) 8 cm
(D) 10 cm

Answer: (C) 8 cm · The council's preliminary key

Q69 TS EAPCET 2024 · 10 May · Shift 1 MCQ

A thin plano-convex lens of focal length 73.5 cm has a circular aperture of diameter 8.4 cm. If the refractive index of the material of the lens is $\frac{5}{3}$, then the thickness of the lens is nearly

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(A) 2.4 cm
(B) 2.4 mm
(C) 1.8 mm
(D) 1.8 cm

Answer: (C) 1.8 mm · The council's preliminary key

Q70 TS EAPCET 2024 · 10 May · Shift 2 MCQ

The power of a thin convex lens placed in air is +4D. The refractive index of the material of the convex lens is $\frac{3}{2}$. If this convex lens is immersed in a liquid of refractive index $\frac{5}{3}$, then

(A) it behaves like a convex lens of focal length 75 cm
(B) it behaves like a convex lens of focal length 125 cm
(C) it behaves like a concave lens of focal length 125 cm
(D) it behaves like a concave lens of focal length 75 cm

Answer: (C) it behaves like a concave lens of focal length 125 cm · The council's preliminary key

Q71 TS EAPCET 2024 · 10 May · Shift 2 MCQ

The refractive index of the material of a small angled prism is 1.6. If the angle of minimum deviation is 4.2°, the angle of the prism is

(A) 4.2°
(B) 7°
(C) 4.8°
(D) 9°

Answer: (B) 7° · The council's preliminary key

Q72 TS EAPCET 2024 · 9 May · Shift 1 MCQ

For a combination of two convex lenses of focal lengths 'f_1' and 'f_2' to act as a glass slab, the distance of separation between them is

(A) $f_1 + f_2$
(B) $f_1 \sim f_2$
(C) $\frac{f_1 + f_2}{2}$
(D) $\frac{f_1 \sim f_2}{2}$

Answer: (A) $f_1 + f_2$ · The council's preliminary key

Q73 TS EAPCET 2024 · 9 May · Shift 1 MCQ

If a ray of light passes through an equilateral prism such that the angle of incidence and the angle of emergence are both equal to 70% of the angle of the prism, then the angle of minimum deviation is

(A) 36°
(B) 18°
(C) 42°
(D) 24°

Answer: (D) 24° · The council's preliminary key

Q74 TS EAPCET 2024 · 9 May · Shift 2 MCQ

A small angled prism is made of a material of refractive index $\frac{3}{2}$. The ratio of the angles of minimum deviations when the prism is placed in air and in water of refractive index $\frac{4}{3}$ is

(A) 4:1
(B) 3:4
(C) 2:3
(D) 1:3

Answer: (A) 4:1 · The council's preliminary key

Q75 TS EAPCET 2024 · 9 May · Shift 2 MCQ

If you are using eye glasses of power 2D, your near point is

(A) 25 cm
(B) 50 cm
(C) 43 cm
(D) 32 cm

Answer: (B) 50 cm · The council's preliminary key

Q76 TS EAPCET 2024 · 9 May · Shift 2 MCQ

The diameter of the objective of a telescope is 3.6 m. The limit of resolution of the telescope for a light of wavelength 540 nm is

(A) 1.22×10^{-7} rad
(B) 1.83×10^{-7} rad
(C) 0.61×10^{-7} rad
(D) 3.76×10^{-7} rad

Answer: (B) 1.83×10^{-7} rad · The council's preliminary key

Q77 AP EAPCET 2023 · 19 May · Shift 1 MCQ

With respect to air, the critical angle in a medium for red light of wave length λ_1 is θ. Other facts remaining same, critical angle for yellow light of wave length λ_2 will be

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(A) θ
(B) more than θ
(C) less than θ
(D) $\frac{\theta\lambda_1}{\lambda_2}$

Answer: (C) less than θ · The council's preliminary key

Q78 AP EAPCET 2023 · 18 May · Shift 1 MCQ

The critical angle for diamond with respect to air is nearly

(A) 48.8°
(B) 41.1°
(C) 37.3°
(D) 24.4°

Answer: (D) 24.4° · The council's preliminary key

Q79 AP EAPCET 2023 · 18 May · Shift 2 MCQ

If r_1, r_2 are the angle of refraction at first face and second face of a prism, then the angle of the prism is

(A) $r_1 - r_2$
(B) $\frac{(r_1-r_2)}{2}$
(C) $\frac{(r_1+r_2)}{2}$
(D) $r_1 + r_2$

Answer: (D) $r_1 + r_2$ · The council's preliminary key

Q80 AP EAPCET 2023 · 17 May · Shift 2 MCQ

The radius of curvature of a convex lens is 40 cm, for each surface. Its refractive index is 1.5. Its focal length is

(A) 40 cm
(B) 20 cm
(C) 80 cm
(D) 30 cm

Answer: (A) 40 cm · The council's preliminary key

Q81 AP EAPCET 2023 · 17 May · Shift 2 MCQ

Diameter of the objective lens of a telescope is 250 cm. For light of wavelength 600 nm, coming from a distant object, the limit of resolution of the telescope is close to

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(A) 1.5×10^{-7} rad
(B) 2.0×10^{-7} rad
(C) 3.0×10^{-7} rad
(D) 4.5×10^{-7} rad

Answer: (C) 3.0×10^{-7} **rad** · The council's preliminary key

Q82 AP EAPCET 2023 · 16 May · Shift 1 MCQ

Light enters from air into a given medium at an angle of 45° with interface of the air-medium surface. After refraction, the light ray is deviated through an angle of 15° from its original direction. The refractive index of the medium is

(A) 1.732
(B) 1.333
(C) 1.414
(D) 2.732

Answer: (C) 1.414 · The council's preliminary key

Q83 AP EAPCET 2023 · 16 May · Shift 2 MCQ

The image formed by a convex mirror of focal length 30 cm is a quarter of the size of the object. The distance of the object from the mirror is

(A) 30 cm
(B) 90 cm
(C) 120 cm
(D) 60 cm

Answer: (B) 90 cm · The council's preliminary key

Q84 AP EAPCET 2023 · 15 May · Shift 1 MCQ

Blue colour of the sky is due to

(A) reflection of light
(B) refraction of light
(C) diffraction of light
(D) scattering of light

Answer: (D) scattering of light · The council's preliminary key

Q85 AP EAPCET 2023 · 15 May · Shift 2 MCQ

The magnifying power of a telescope with tube length 60 cm is 5. Then the focal length of its eye piece is

(A) 20 cm
(B) 40 cm
(C) 30 cm
(D) 10 cm

Answer: (D) 10 cm · The council's preliminary key

Q86 TS EAMCET 2023 · 14 May · Shift 1 MCQ

Two convex lenses of focal lengths 20 cm and 30 cm are placed in contact with each other co-axially. The focal length of the combination is

(A) 60 cm
(B) 10 cm
(C) 12 cm
(D) 40 cm

Answer: (C) 12 cm · The council's preliminary key

Q87 TS EAMCET 2023 · 14 May · Shift 2 MCQ

The focal lengths of the objective and the eyepiece of a compound microscope are 2 cm and 3 cm respectively and the distance between them is 15 cm. The final image formed by the eyepiece is at infinity. The distances of the object and the image produced by the object from the objective lens are respectively

(A) 2.4 cm, 12 cm
(B) 2.4 cm, 15 cm
(C) 2.3 cm, 12 cm
(D) 2.3 cm, 3 cm

Answer: (A) 2.4 cm, 12 cm · The council's preliminary key

Q88 TS EAMCET 2023 · 13 May · Shift 1 MCQ

Refractive index of a medium is μ. If the angle of incidence is twice that of the angle of refraction, then the angle of incidence is

(A) $\cos^{-1}\left(\frac{\mu}{2}\right)$
(B) $\sin^{-1}\left(\frac{\mu}{2}\right)$
(C) $2\cos^{-1}\left(\frac{\mu}{2}\right)$
(D) $\sin^{-1}(\mu)$

Answer: (C) $2\cos^{-1}\left(\frac{\mu}{2}\right)$ · The council's preliminary key

Q89 TS EAMCET 2023 · 13 May · Shift 2 MCQ

A convex lens forms a real image of a point object placed on its principal axis. If the upper half of the lens is painted black, then

(A) the image shifts upward
(B) the image shifts downward
(C) the intensity of the image decreases
(D) the intensity of the image increases

Answer: (C) the intensity of the image decreases · The council's preliminary key

Q90 TS EAMCET 2023 · 12 May · Shift 1 MCQ

An empty tank has concave mirror as its bottom. When sunlight falls normally on the mirror, it is focussed at a height of 32 cm from the mirror. If the tank is filled with water upto a height of 20 cm, then the sunlight focusses at

(refractive index of water = $\frac{4}{3}$)

(A) 16 cm above water level
(B) 9 cm above water level
(C) 16 cm below water level
(D) 9 cm below water level.

Answer: (B) 9 cm above water level · The council's preliminary key

Q91 TS EAMCET 2023 · 12 May · Shift 2 MCQ

The angles of incidence and emergence of a light ray passing through a prism of angle A are i and e respectively. The total deviation produced by the prism is

(A) $i+e+A$
(B) $i+e-A$
(C) $i+e-2A$
(D) $i+e+2A$

Answer: (B) $i+e-A$ · The council's preliminary key

Q92 TS EAMCET 2022 · 20 Jul · Shift 1 MCQ

What is the refractive index of the material of a double convex lens having radii of curvature of 5 cm and 10 cm and focal length of $\frac{20}{3}$ cm

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(A) 5

(B) 2.0

(C) 2.4

(D) 2.6

Answer: (A)

1. 5

· The council's preliminary key

Q93 TS EAMCET 2022 · 20 Jul · Shift 2 MCQ

A convex lens of focal length 25 cm and made of glass with refractive index 1.5 is immersed in water. The absolute change in focal length of the glass is

[Use refractive index of water = $\frac{4}{3}$]

(A) 100 cm

(B) 37.5 cm

(C) 75 cm

(D) 12.5 cm

Answer: (C) 75 cm · The council's preliminary key

Q94 TS EAMCET 2022 · 19 Jul · Shift 1 MCQ

A light ray travels from a medium with refractive index n_1 to another medium of refractive index n_2. If $n_1 = 2$ and $n_2 = \sqrt{3}$, then find the critical angle.

(A) 15°

(B) 30°

(C) 45°

(D) 60°

Answer: (D) 60° · The council's preliminary key

Q95 TS EAMCET 2022 · 19 Jul · Shift 2 MCQ

see figure

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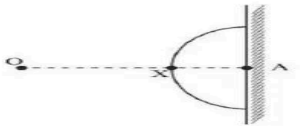
Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0



A spherical glass is attached to a rigid wall as shown in the figure. An observer located at point O is looking at a point A on the wall. The refractive index of the glass is 1.5 and that of air is 1.0. The distances are OA = 8 cm, XA = 3 cm. If the radius of curvature of spherical glass surface is R = 5 cm, then the apparent distance of A from observer O is

ఒక గోళాకార గాజును దృఢమైన గోడకు పటంలో చూపినట్లు అమర్చారు. O బిందువు వద్ద వున్న పరిశీలకుడు గోడ మీద A బిందువును చూస్తున్నాడు. గాజు మరియు గాలి వక్రీభవన గుణకాలు 1.5 మరియు 1.0. దూరాలు OA = 8 cm, XA = 3 cm. గోళాకార గాజు వక్రతా వ్యాసార్ధము R = 5 cm అయితే A మరియు పరిశీలకుడు O ల మధ్య ఆభాస దూరం

Options :

1. 6.5 cm
2. 8.5 cm
3. 7.0 cm
4. 7.5 cm

(A) 6.5 cm
(B) 8.5 cm
(C) 7.0 cm
(D) 7.5 cm

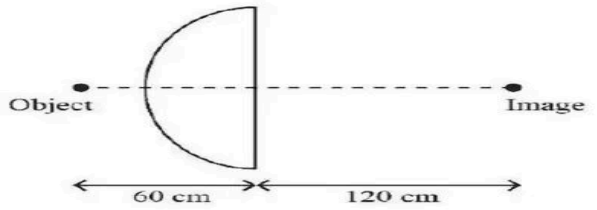
Answer: (D) 7.5 cm · The council's preliminary key

Q96 TS EAMCET 2022 · 18 Jul · Shift 1 MCQ

A lens is made of glass having an index of refraction 1.5. One side of the lens is flat and the other side is convex with a radius R. If an object is placed 60 cm, towards the convex side of the lens, the image is formed at 120 cm on the other side of the lens. The value of R is

(see the figure above)

A lens is made of glass having an index of refraction 1.5. One side of the lens is flat and the other side is convex with a radius R. If an object is placed 60 cm, towards the convex side of the lens, the image is formed at 120 cm on the other side of the lens. The value of R is



Options :

1. 20 cm
2. $\frac{40}{3}$ cm
3. 33 cm
4. 18 cm

(A) 20 cm
(B) $\frac{40}{3}$ cm
(C) 33 cm
(D) 18 cm

Answer: (A) 20 cm · The council's preliminary key

Q97 TS EAMCET 2022 · 18 Jul · Shift 2 MCQ

A convex lens focusses an object 20 cm from it on a screen placed 5 cm away from it. A glass plate (refractive index = $\frac{7}{5}$) of thickness 1.4 cm is inserted between the lens and the screen. What is the distance of the object from the lens, so that its image is again focused on the screen?

(A) 22.5 cm
(B) 30.7 cm
(C) 25.0 cm
(D) 28.4 cm

Answer: (B) 30.7 cm · The council's preliminary key

Q98 AP EAPCET 2022 · 8 Jul · Shift 1 MCQ

Two lenses of powers -1.75 D and $+2.25$ D are placed in contact. The focal length of the combination is

(A) $100\ \text{cm}$
(B) $50\ \text{cm}$
(C) $200\ \text{cm}$
(D) $150\ \text{cm}$

Answer: (C) $200\ \text{cm}$ · The council's preliminary key

Q99 AP EAPCET 2022 · 8 Jul · Shift 2 MCQ

A convergent lens is placed 40 cm to the right of a diverging lens of focal length 15 cm. A parallel beam of light enters the divergent lens from the left, and the beam is again parallel when it emerges from the convergent lens. The focal length of the convergent lens is

(A) $40\ \text{cm}$
(B) $25\ \text{cm}$
(C) $55\ \text{cm}$
(D) $27.5\ \text{cm}$

Answer: (C) $55\ \text{cm}$ · The council's preliminary key

Q100 AP EAPCET 2022 · 7 Jul · Shift 1 MCQ

A beam of light is incident from air on the surface of a liquid. The angle of incidence is θ and the angle of refraction is α. If the critical angle for liquid when surrounded by air is θ_c then $\sin\theta_c$ is

(A) $\dfrac{\sin(\alpha)}{\sin(\theta)}$
(B) $\sin(\alpha) \times \sin(\theta)$
(C) $\dfrac{\sin(\theta)}{\sin(\alpha)}$
(D) $\dfrac{\sin(\alpha)}{\cos(\theta)}$

Answer: (A) $\dfrac{\sin(\alpha)}{\sin(\theta)}$ · The council's preliminary key

Q101 AP EAPCET 2022 · 7 Jul · Shift 2 MCQ

An optician prescribes a corrective lens of power +2D, then the focal length of the required convex lens is

(A) 10 cm
(B) 50 cm
(C) 10 m
(D) 50 m

Answer: (B) 50 cm · The council's preliminary key

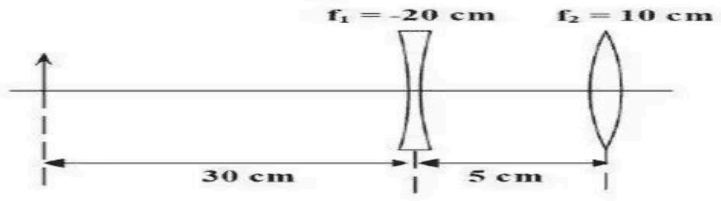
EdLoop EAPCET

Q102 AP EAPCET 2022 · 6 Jul · Shift 1 MCQ

A concave lens and a convex lens are arranged as shown in the figure. The position of the final image *(see the figure above)*

A concave lens and a convex lens are arranged as shown in the figure. The position of the final image

ఒక పుటాకార కటకం మరియు ఒక కుంభాకార కటకం పటంలో చూపిన విధంగా అమర్చబడినాయి. అంతిమ ప్రతిబింబ స్థానం



Options :

1. 17 cm to the left of convex lens
   కుంభాకార కటకం నుండి ఎడమ వైపు 17 cm
2. 24.2 cm to the right of concave lens
   పుటాకార కటకం నుండి కుడివైపు 24.2 cm
3. 29.2 cm to the right of concave lens
   పుటాకార కటకం నుండి కుడివైపు 29.2 cm
4. 24.2 cm to the left of convex lens
   కుంభాకార కటకం నుండి ఎడమ వైపు 24.2 cm

(A) 17 cm to the left of convex lens
(B) 24.2 cm to the right of concave lens
(C) 29.2 cm to the right of concave lens
(D) 24.2 cm to the left of convex lens

Answer: (C) 29.2 cm to the right of concave lens · The council's preliminary key

Q103 AP EAPCET 2022 · 6 Jul · Shift 2 MCQ

A screen is placed 100 cm from an object. The image of the object on the screen is formed by a convex lens at two different locations separated by 20 cm. The focal length of the lens is

(A) $18\ \text{cm}$
(B) $24\ \text{cm}$
(C) $25\ \text{cm}$
(D) $30\ \text{cm}$

Answer: (B) $24\ \text{cm}$ · The council's preliminary key

Q104 AP EAPCET 2022 · 6 Jul · Shift 2 MCQ

A light ray is incident from a medium of refractive index 2 into a medium of refractive index $\sqrt{3}$. The critical angle is

(A) 30°
(B) 45°
(C) 60°
(D) 90°

Answer: (C) 60° · The council's preliminary key

Q105 AP EAPCET 2022 · 5 Jul · Shift 1 MCQ

A needle is lying at the bottom of a water tank of height 12 cm. The apparent depth of the needle measured by a microscope is 9 cm. If the water is replaced by a liquid of refractive index of 1.5 of same height, the distance through which the microscope has to be moved to focus the needle again is

(A) 1.2 cm
(B) 1.1 cm
(C) 1 cm
(D) 1.33 cm

Answer: (C) 1 cm · The council's preliminary key

Q106 AP EAPCET 2022 · 5 Jul · Shift 2 MCQ

A ray of light is incident at 30° from a medium of refractive index 2 into a medium of refractive index 1, then the angle of refraction is

(A) 30°
(B) 60°
(C) 45°
(D) 90°

Answer: (D) 90° · The council's preliminary key

Q107 AP EAPCET 2022 · 4 Jul · Shift 1 MCQ

A ray is incident from a medium of refractive index 2 into a medium of refractive index 1. The critical angle is

(A) 30°
(B) 60°
(C) 45°
(D) 90°

Answer: (A) 30° · The council's preliminary key

EdLoop EAPCET

Q108 AP EAPCET 2022 · 4 Jul · Shift 2 MCQ

The radii of curvature of a double convex lens are 4 cm and 8 cm. If the refractive index of the material of the lens is 1.5, the focal length of the lens is nearly

(A) 16 cm
(B) 12.11 cm
(C) 7.33 cm
(D) 5.33 cm

Answer: (D) 5.33 cm · The council's preliminary key

Q109 AP EAPCET 2021 · 5 Oct · Shift 1 MCQ

A plane mirror is approaching you at $5\ \text{cm.s}^{-1}$. You can see your image in it. At what speed will your image approach you?

(A) $10\ \text{cm.s}^{-1}$
(B) $5\ \text{cm.s}^{-1}$
(C) $20\ \text{cm.s}^{-1}$
(D) $15\ \text{cm.s}^{-1}$

Answer: (A) $10\ \text{cm.s}^{-1}$ · The council's preliminary key

Q110 AP EAPCET 2021 · 25 Aug · Shift 1 MCQ

A thin lens of refractive index 1.5 has optical power of -5 Diopter in air. Its optical power in a liquid medium with refractive index 1.6 is _____ Diopter

(A) 1
(B) 2
(C) 4
(D) 3

Answer: (A) 1 · The council's preliminary key

Q111 AP EAPCET 2021 · 25 Aug · Shift 2 MCQ

If refractive index of water is $\frac{4}{3}$ and that of a given slab immersed in it is $\frac{5}{3}$. The value of critical angle for a ray of light tending to go from glass to water is:

(A) $\sin^{-1}\left(\frac{4}{5}\right)$
(B) $\sin^{-1}\left(\frac{3}{4}\right)$
(C) $\sin^{-1}\left(\frac{5}{3}\right)$
(D) $\sin^{-1}\left(\frac{4}{3}\right)$

Answer: (A) $\sin^{-1}\left(\frac{4}{5}\right)$ · The council's preliminary key

Q112 AP EAPCET 2021 · 24 Aug · Shift 1 MCQ

The radius of curvature of the face of planoconvex lens is $12\ \text{cm}$ and its refractive index is 1.5. Then the focal length of the lens is:

(A) $26\ \text{cm}$
(B) $22\ \text{cm}$
(C) $24\ \text{cm}$
(D) $20\ \text{cm}$

Answer: (C) $24\ \text{cm}$ · The council's preliminary key

Q113 AP EAPCET 2021 · 24 Aug · Shift 2 MCQ

The focal length of a convex lens is 'f'. An object is placed at a distance 'x' from its first focal point. The ratio of the size of the real image to that of the object is _____

(A) $\frac{f}{x^2}$
(B) $\frac{x^2}{f}$
(C) $\frac{f}{x}$
(D) $\frac{x}{f}$

Answer: (C) $\frac{f}{x}$ · The council's preliminary key

Q114 AP EAPCET 2021 · 23 Aug · Shift 1 MCQ

A well-cut diamond appears bright because _____

(A) it emits light
(B) it is radioactive
(C) of its total internal reflection
(D) it has high density

Answer: (C) of its total internal reflection · The council's preliminary key

Q115 AP EAPCET 2021 · 23 Aug · Shift 2 MCQ

Sir C.V. Raman got the Nobel prize in physics for his work on _____

(A) Reflection of light
(B) Refraction of light
(C) Scattering of light
(D) Dispersion of light

Answer: (C) Scattering of light · The council's preliminary key

EdLoop EAPCET

Q116 AP EAPCET 2021 · 23 Aug · Shift 2 MCQ

Assertion (A): The colour of radiation does not change on passing through different media.
Reason (R): The media do not absorb or emit colours.

(A) Both A and R are true and R is a correct explanation for A
(B) Both A and R are true but R is not a correct explanation for A
(C) A is true, R is false
(D) A is false, R is true

Answer: (C) A is true, R is false · The council's preliminary key

Q117 AP EAPCET 2021 · 20 Aug · Shift 2 MCQ

Assertion (A): The focal length of lens does not change when red light is replaced by blue light.
Reason (R): The focal length of lens does not depend in colour of light used.

(A) Both A and R are true and R is a correct explanation for A
(B) Both A and R are true but R is not a correct explanation for A
(C) A is true, R is false
(D) Both A and R are false

Answer: (D) Both A and R are false · The council's preliminary key

Q118 AP EAPCET 2021 · 19 Aug · Shift 2 MCQ

Light of wavelength $300\ \text{nm}$ in medium A enters into medium B through a plane surface. If the frequency of light is $5 \times 10^{14}\ \text{Hz}$ and the ratio of speed in medium A to that is (sic) medium B is $\frac{4}{5}$, the absolute refractive index of medium B is,

(A) 1.6
(B) 1.5
(C) 1.3
(D) 1.45

Answer: (A) 1.6 · The council's preliminary key

Q119 TS EAMCET 2021 · 6 Aug · Shift 1 MCQ

A convex lens with lateral magnification 2 is used to image a point at the bottom of a tank. The image of the point is formed 60 cm above the lens. Now a liquid is filled into the tank to a height of 24 cm. It is found that the distance of the image of the same point is now 120 cm above the lens. Find the refractive index of the liquid.

(A) 1.31
(B) 1.33
(C) 1.36
(D) 1.39

Answer: (B) 1.33 · The council's preliminary key

Q120 TS EAMCET 2021 · 6 Aug · Shift 2 MCQ

The focal length of a biconvex lens made of glass, of equal radii is f. If the lens is dipped in the water then the focal length becomes. (Take refractive index of glass and water as $\frac{3}{2}$ and $\frac{4}{3}$, respectively)

(A) $2f$
(B) $4f$
(C) $(5/3)f$
(D) $(7/4)f$

Answer: (B) $4f$ · The council's preliminary key

Q121 TS EAMCET 2021 · 5 Aug · Shift 1 MCQ

An object is placed in front of a spherical concave mirror between the focal point and the radius of curvature. Its image is

(A) Inverted, real, farther than radius of curvature from mirror
(B) Inverted, virtual, closer than focal point to mirror
(C) Upright, real, farther than radius of curvature from mirror
(D) Inverted, Real, closer than radius of curvature to mirror

Answer: (A) Inverted, real, farther than radius of curvature from mirror · The council's preliminary key

Q122 TS EAMCET 2021 · 5 Aug · Shift 1 MCQ

Blue light travelling in vacuum has a wavelength of 450 nm. It enters a medium whose refractive index is 1.5. What is its frequency in the medium? (Speed of light in vacuum = 3×10^8 m/s)

(A) 6.67×10^{14} Hz
(B) 10^{15} Hz
(C) 4.45×10^{14} Hz
(D) 10^{14} Hz

Answer: (A) 6.67×10^{14} **Hz** · The council's preliminary key

Q123 TS EAMCET 2021 · 5 Aug · Shift 2 MCQ

A point source is located at a distance of 20 cm from the front surface of a symmetrical glass biconvex lens with equal radii of curvature 5 cm. The distance at which image formed from the rear

surface of this lens is
[Given refractive index of the glass is 1.5]

(A) $\frac{20}{3}$ cm
(B) $\frac{10}{3}$ cm
(C) 5 cm
(D) 10 cm

Answer: (A) $\frac{20}{3}$ **cm** · The council's preliminary key

Q124 TS EAMCET 2021 · 4 Aug · Shift 1 MCQ

A screen is placed 90 cm from an object. The image is formed by using a convex lens twice on the screen by putting the lens at two different locations separated by 20 cm. The focal length of the lens is approximately equal to

(A) 21.38 cm
(B) 30.0 cm
(C) 35.0 cm
(D) 24 cm

Answer: (A) 21.38 cm · The council's preliminary key

Q125 TS EAMCET 2021 · 4 Aug · Shift 2 MCQ

Two lenses of power $-1.6\,D$ and $+2.1\,D$ respectively are placed in contact. The focal length of the combination is

(A) $100\ \text{cm}$
(B) $200\ \text{cm}$
(C) $160\ \text{cm}$
(D) $210\ \text{cm}$

Answer: (B) $200\ \text{cm}$ · The council's preliminary key

Q126 AP EAMCET 2020 · 7 Oct · Shift 1 MCQ

A concave lens of glass, refractive index 1.5 has both surfaces of same radius of curvature R. On immersion in a medium of refractive index 1.75, it will behave as a

(A) Convergent lens of focal length 3.5 R.
(B) Convergent lens of focal length 3.0 R
(C) Divergent lens of focal length 3.5 R.
(D) Divergent lens of focal length 3.0 R

Answer: (A) Convergent lens of focal length 3.5 R. · The council's preliminary key

EdLoop EAPCET

Q127 AP EAMCET 2020 · 22 Sep · Shift 1 MCQ

A travelling microscope is focused on an ink dot marked on a piece of paper. When a glass slab ($\mu = 1.5$) of thickness $0.12\ \mathrm{m}$ is placed on the ink dot. The travelling microscope has to be moved _____ in order to restore the focus

(A) $0.04\ \mathrm{m}$ downwards
(B) $0.04\ \mathrm{m}$ upwards
(C) $0.06\ \mathrm{m}$ downwards
(D) $0.06\ \mathrm{m}$ upwards

Answer: (B) $0.04\ \mathrm{m}$ **upwards** · The council's preliminary key

Q128 AP EAMCET 2020 · 22 Sep · Shift 2 MCQ

A ray of light is incident normally on a plane mirror. The angle of reflection will be _____

(A) 0°
(B) 90°
(C) Will not be reflected
(D) 60°

Answer: (A) 0° · The council's preliminary key

Q129 AP EAMCET 2020 · 18 Sep · Shift 1 MCQ

A light wave has a frequency of $4 \times 10^{14}\ \mathrm{Hz}$ and a wavelength of $5 \times 10^{-7}\ \mathrm{m}$ in a medium. The refractive index of the medium is

(A) 1.5
(B) 1.33
(C) 1.0
(D) 0.66

Answer: (A) 1.5 · The council's preliminary key

Q130 AP EAMCET 2020 · 18 Sep · Shift 2 MCQ

A prism ($\mu = 1.5$) has the refracting angle of 30^0. The deviation of a monochromatic ray incident normally on its one surface will be. (Given $\sin 48^\circ 36' = 0.75$)

(A) $18^\circ 36'$
(B) $22^\circ 38'$
(C) 18°
(D) $22^\circ 1'$

Answer: (A) $18^\circ 36'$ · The council's preliminary key

Q131 AP EAMCET 2020 · 17 Sep · Shift 1 MCQ

The lower half of a vessel of depth $2d$ cm is filled with a liquid of refractive index μ_1 and the upper half with a liquid of refractive index μ_2. The apparent depth of the vessel seen perpendicularly is

(A) $d\left(\frac{\mu_1\mu_2}{\mu_1+\mu_2}\right)$
(B) $d\left(\frac{1}{\mu_1}+\frac{1}{\mu_2}\right)$
(C) $2d\left(\frac{1}{\mu_1}+\frac{1}{\mu_2}\right)$
(D) $2d\left(\frac{1}{\mu_1\mu_2}\right)$

Answer: (B) $d\left(\frac{1}{\mu_1}+\frac{1}{\mu_2}\right)$ · The council's preliminary key

Q132 AP EAMCET 2020 · 17 Sep · Shift 1 MCQ

The limit of resolution of an oil immersion objective microscope of numerical aperture 0.8 for light of wavelength $0.6\ \mu m$ is

(A) $\frac{1.5}{8}\ \mu m$
(B) $\frac{3}{8}\ \mu m$
(C) $\frac{5}{8}\ \mu m$
(D) $\frac{7}{8}\ \mu m$

Answer: (B) $\frac{3}{8}\ \mu m$ · Checked by our team

Q133 AP EAMCET 2020 · 17 Sep · Shift 2 MCQ

A ray of light travels from a medium of refractive index 2 to another medium of refractive index $\sqrt{2}$. Total internal reflection takes place when the angle of incidence is _____

(A) 30°
(B) 45°
(C) 60°
(D) 80°

Options (3) or (4) were accepted. More than one answer was accepted. · Checked by our team

Q134 TS EAMCET 2020 · 14 Sep · Shift 1 MCQ

A thin prism of angle 6° made of glass of refractive index 1.5 is combined with another prism made of refractive index 1.75 to produce dispersion without deviation. Then the angle of the second prism is

(A) 5°
(B) 8°
(C) 4°
(D) 6°

Answer: (C) 4° · Official TGCHE final key

Q135 TS EAMCET 2020 · 14 Sep · Shift 1 MCQ

A small object is placed in the air, at a distance 45 cm from a convex refracting surface of radius of curvature 15 cm. If the surface separates air from glass of refractive index 1.5, then the position of image is

(A) 100 cm
(B) 120 cm
(C) 125 cm
(D) 135 cm

Answer: (D) 135 cm · Official TGCHE final key

Q136 TS EAMCET 2020 · 14 Sep · Shift 2 MCQ

A short straight object of length ℓ lies along the central axis of a spherical concave mirror, at a distance X from the mirror. The focal length of the mirror is F. If the length of the image in the mirror is ℓ', then ratio $\left(\frac{\ell'}{\ell}\right)$ is

(Assume $\ell \ll X$ and $\ell \ll F$)

(see the figure above)

Question Number : 102 Question Id : 7196501382 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

A short straight object of length ℓ lies along the central axis of a spherical concave mirror, at a distance X from the mirror. The focal length of the mirror is F. If the length of the image in the mirror is ℓ', then ratio $\left(\frac{\ell'}{\ell}\right)$ is

(Assume $\ell << X$ and $\ell << F$)

ఒక గోళీయ పుటాకార దర్పణం యొక్క కేంద్రీయ అక్షముపై 'ℓ' పొడవుగల చిన్నపాటి సరళ (straight) వస్తువు దర్పణానికి 'X' దూరాన ఉంచబడింది. దర్పణం యొక్క నాభ్యంతరం 'F'. దర్పణంలో ప్రతిబింబము యొక్క పొడవు ℓ' అయితే, నిష్పత్తి $\left(\frac{\ell'}{\ell}\right)$
($\ell << X$ మరియు $\ell << F$ అనుకోండి)



Options :

1. $\frac{F-X}{F}$
2. $\left(\frac{F-X}{F}\right)^2$
3. $\left(\frac{F}{F-X}\right)^2$
4. $\frac{F}{X}$

(A) $\frac{F-X}{F}$

(B) $\left(\frac{F-X}{F}\right)^2$

(C) $\left(\frac{F}{F-X}\right)^2$

(D) $\frac{F}{X}$

Answer: (C) $\left(\frac{F}{F-X}\right)^2$ · Official TGCHE final key

Q137 TS EAMCET 2020 · 14 Sep · Shift 2 MCQ

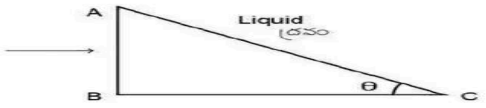
Consider a glass prism immersed in a liquid as shown below. The refractive index of glass and liquid is 1.5 and 1.2 respectively. A ray of light enters the prism perpendicular to the face AB. The largest value of angle θ is, if the ray is totally reflected at the face AC:

(see the figure above)

Question Number : 103 Question Id : 7196501383 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Consider a glass prism immersed in a liquid as shown below. The refractive index of glass and liquid is 1.5 and 1.2 respectively. A ray of light enters the prism perpendicular to the face AB. The largest value of angle θ is, if the ray is totally reflected at the face AC:

క్రింద చూపించిన విధంగా గాజు పట్టకము ఒక ద్రవములో ఉంచబడినది. గాజు మరియు ద్రవాల వక్రతా గుణకాలు వరుసగా 1.5 మరియు 1.2. AB ముఖానికి లంబంగా ఒక కాంతి రేఖ పట్టకములోనికి ప్రవేశిస్తుంది. AC ముఖము వద్ద కాంతి రేఖ సంపూర్ణ పరావర్తనం చెందితే, θ కోణం యొక్క గరిష్ఠ విలువ?



Options :

1. $\text{Cos}^{-1}(0.8)$
2. $\text{Sin}^{-1}(0.8)$
3. $\text{Cos}^{-1}(0.6)$
4. $\text{Sin}^{-1}(0.4)$

(A) $\text{Cos}^{-1}(0.8)$

(B) $\text{Sin}^{-1}(0.8)$

(C) $\text{Cos}^{-1}(0.6)$

(D) $\text{Sin}^{-1}(0.4)$

Answer: (A) $\text{Cos}^{-1}(0.8)$ · Official TGCHE final key

Q138 TS EAMCET 2020 · 11 Sep · Shift 1 MCQ

The magnifications produced by a convex lens for two position of an object are 4 and 3 respectively. If the distance of separation between the two positions of the object is 2 cm, then the focal length of the lens is

(A) 20 cm
(B) 16 cm
(C) 28 cm
(D) 24 cm

Answer: (D) 24 cm · Official TGCHE final key

Q139 TS EAMCET 2020 · 11 Sep · Shift 2 MCQ

A prism is made of a glass having refractive index $\sqrt{2}$. If the angle of minimum deviation is equal to angle of the prism, then the angle of prism is.

(A) 45°
(B) 90°
(C) 60°
(D) 30°

Answer: (B) 90° · Official TGCHE final key

Q140 TS EAMCET 2020 · 11 Sep · Shift 2 MCQ

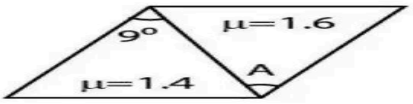
A thin glass prism of angle 9^0 with refractive index 1.4 is combined with another glass prism of refractive index 1.6, as shown in the figure. The combination of the prism provides dispersion without deviation. Determine the angle(A) of the second prism.

(see the figure above)

Question Number : 103 Question Id : 7196501063 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

A thin glass prism of angle 9^0 with refractive index 1.4 is combined with another glass prism of refractive index 1.6, as shown in the figure. The combination of the prism provides dispersion without deviation. Determine the angle(A) of the second prism.

పటంలో చూపినట్లు పట్టక కోణము 9^0 మరియు వక్రీభవన గుణకము 1.4 గా కల ఒక పలుచని గాజు పట్టకము 1.6 వక్రీభవన గుణకము కలిగిన మరియొక గాజు పట్టకములో అనుసంధానించబడినది. ఈ రెండింటి అనుసంధానము వలన కాంతిని విక్షేపనం చెందకుండా విక్షేపణము చెస్తుంది. అయితే రెండవ పట్టకము యొక్క కోణము (A)ను కనుగొనుడి.



Options :
1. 9^0
2. 12^0
3. 6^0
4. 4^0

(A) 9^0
(B) 12^0
(C) 6^0
(D) 4^0

Answer: (C) 6^0 · Official TGCHE final key

Q141 TS EAMCET 2020 · 11 Sep · Shift 2 MCQ

Wavelength of light used in an optical instrument are $\lambda_1 = 4000\,\text{Å}$ and $\lambda_2 = 5000\,\text{Å}$, then the ratio of their respective resolving powers (corresponding to λ_1 and λ_2) is

(A) $3:5$
(B) $9:1$
(C) $4:5$
(D) $5:4$

Answer: (D) $5:4$ · Official TGCHE final key

Q142 TS EAMCET 2020 · 10 Sep · Shift 1 MCQ

If the image of an object is at the focal point (f) to the right side of a convex lens, the position of the object on the left of the lens is at

(A) f
(B) 2f
(C) $<$f
(D) ∞

Answer: (D) ∞ · Official TGCHE final key

Q143 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

A telescope has an objective of focal length 100 cm and an eyepiece of focal length 5 cm. The magnifying power of the telescope is

(A) 20
(B) 500
(C) $\frac{1}{20}$
(D) 105

Answer: (A) 20 · Official TGCHE final key

Q144 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

A convex lens and a concave lens, each with focal length of 4 cm are separated by a distance of 6 cm along their axis. An object is placed 8 cm before the convex lens. The distance between the object and its image is:

(A) 10 cm
(B) 15cm
(C) 18 cm
(D) 24 cm

Answer: (C) 18 cm · Official TGCHE final key

Q145 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

The limit of resolution of a telescope is 3.0×10^{-7} rad. Assuming that it is used to see the light of wavelength 525 nm from a star, what should be the diameter of the objective

(A) 2.1 m
(B) 2.0 m
(C) 1.8 m
(D) 1.9 m

Answer: (A) 2.1 m · Official TGCHE final key

Q146 TS EAMCET 2020 · 9 Sep · Shift 1 MCQ

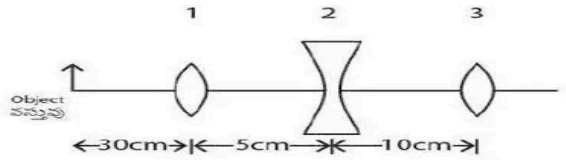
The position of final image formed by the given lens combination from the third lens will be at a distance of ($f_1 = +10$, $f_2 = -10$ cm and $f_3 = +30$ cm)

(see the figure above)

Question Number : 102 Question Id : 719650262 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The position of final image formed by the given lens combination from the third lens will be at a distance of ($f_1 = +10$, $f_2 = -10$ cm and $f_3 = +30$ cm)

ఇచ్చిన కటకముల సంయోగము వలన ఏర్పడే తుది ప్రతిబింబస్థానము మూడవ కటకము నుండి ఎంత దూరంలో ఏర్పడుతుంది ($f_1 = +10$, $f_2 = -10$ cm మరియు $f_3 = +30$ cm)



Options :

1. 15 cm
2. Infinity
అనంతము
3. 45 cm
4. 30 cm

(A) 15 cm
(B) Infinity
(C) 45 cm
(D) 30 cm

Answer: (D) 30 cm · Official TGCHE final key

Q147 TS EAMCET 2020 · 9 Sep · Shift 1 MCQ

An object is placed at a distance of 40 cm in front of a concave mirror of focal length 20 cm. The image produced is

(A) real, inverted and smaller in size
(B) real, inverted and of same size
(C) real and erect
(D) virtual and inverted

Answer: (B) real, inverted and of same size · Official TGCHE final key

Q148 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

An object is placed at a certain distance left to a convex lens of focal length 20 cm. Find the distance of the object if the image obtained is magnified by 4 times.

(A) 25 cm when the image is real
(B) 15 cm when the image is real
(C) 25 cm when the image is virtual
(D) 10 cm when the image is virtual

Answer: (A) 25 cm when the image is real · Official TGCHE final key

Q149 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

Which of the following statement is incorrect?

(A) Dispersion is maximum for violet colour
(B) Red light travels faster than violet light in a medium
(C) In vacuum red light travel faster than others
(D) Refractive index of violet light is higher in flint glass as compared to crown glass

Answer: (C) In vacuum red light travel faster than others · Official TGCHE final key

Q150 TS EAMCET 2019 · 6 May · Shift 1 MCQ

An object 'O' is placed at 7 cm to the left of a concave mirror of radius of curvature 12 cm as shown in figure. The position of the image will be at a distance of

(see the figure above)

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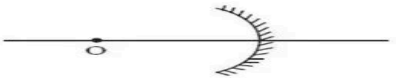
Question Number : 103 Question Id : 7512365063 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An object 'O' is placed at 7 cm to the left of a concave mirror of radius of curvature 12 cm as shown in figure. The position of the image will be at a distance of

పటంలో చూపిన విధంగా 12 cm ల వక్రతా వ్యాసార్ధమున్న పుటాకార దర్పణానికి ఎడమవైపు 7 cm ల దూరంలో 'O' అనే వస్తువునుంచారు. అప్పుడు ప్రతిబింబము ఏర్పడే దూరము



Options :

1. 20 cm from the mirror to the left
దర్పణము నుండి ఎడమవైపు 20 cm

2. 30 cm from the mirror to the right
దర్పణము నుండి కుడివైపు 30 cm

3. 42 cm from the mirror to the left
దర్పణము నుండి ఎడమవైపు 42 cm

4. 42 cm from the mirror to the right
దర్పణము నుండి కుడివైపు 42 cm

ET 2019

(A) 20 cm from the mirror to the left
(B) 30 cm from the mirror to the right
(C) 42 cm from the mirror to the left
(D) 42 cm from the mirror to the right

Answer: (C) 42 cm from the mirror to the left · Official TGCHE final key

Q151 TS EAMCET 2019 · 4 May · Shift 1 MCQ

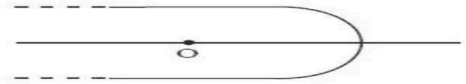
A point object 'O' is placed on the axis of a cylindrical piece of glass of refractive index 1.6 as shown in the figure. One surface of the glass piece is convex with radius of curvature 3 mm. The point appeared to be at 5 mm on the axis when viewed along the axis and from right side of convex surface. The distance of the point object from the convex surface is

(see the figure above)

Question Number : 103 Question Id : 7512364583 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A point object 'O' is placed on the axis of a cylindrical piece of glass of refractive index 1.6 as shown in the figure. One surface of the glass piece is convex with radius of curvature 3 mm. The point appeared to be at 5 mm on the axis when viewed along the axis and from right side of convex surface. The distance of the point object from the convex surface is

పటంలో చూపినట్లుగా, వక్రీభవన గుణకం 1.6 గల స్థూపాకార గాజుముక్క (కటకం) యొక్క అక్షంపైన బిందురూప వస్తువు 'O' ను ఉంచినారు. ఆ గాజుముక్క ఒక ఉపరితలం, వక్రతా వ్యాసార్ధం 3 mm గల కుంభాకారం. కుంభాకార ఉపరితలం యొక్క కొనపై నుంచి అక్షం వెంట వీక్షించినపుడు, ఆ బిందువు అక్షంపైన 5 mm వద్ద ఉన్నట్లుగా కన్పిస్తుంది. అయితే కుంభాకార ఉపరితలం నుంచి బిందురూప వస్తువు యొక్క దూరం,



Options :

1. 4 mm
2. 6 mm
3. 3 mm
4. 2.5 mm

TS EAMCET 2019

(A) 4 mm

(B) 6 mm

(C) 3 mm

(D) 2.5 mm

Answer: (A) 4 mm · Official TGCHE final key

Q152 TS EAMCET 2019 · 4 May · Shift 1 MCQ

The limit of resolution of a telescope is 2.5×10^{-7} radians. If the telescope is used to detect light of wavelength 500 nm coming from a star, the diameter of the objective lens used by the telescope is:

(A) 244 cm

(B) 258 cm

(C) 228 cm

(D) 264 cm

Answer: (A) 244 cm · Official TGCHE final key

Q153 TS EAMCET 2019 · 4 May · Shift 2 MCQ

Two lenses A and B having focal lengths 2.0 cm and 5.0 cm respectively are placed 14 cm apart. Lens A is placed to the left of lens B. An object is placed 3 cm to the left of lens A. The distance of the image from lens A will be

(A) $\frac{40}{3}$ cm
(B) $\frac{82}{3}$ cm
(C) $\frac{112}{5}$ cm
(D) $\frac{92}{5}$ cm

Answer: (B) $\frac{82}{3}$ **cm** · Official TGCHE final key

Q154 TS EAMCET 2019 · 3 May · Shift 2 MCQ

Three lenses of focal lengths +10 cm, −10cm and +30 cm are placed at a distance of 30 cm, 35 cm and 45 cm respectively from an object. The distance between the object and the image formed is

(A) 100 cm
(B) 75 cm
(C) 30 cm
(D) 45 cm

Answer: (B) 75 cm · Official TGCHE final key

Q155 AP EAMCET 2019 · 23 Apr · Shift 1 MCQ

When an object is moved along the principal axis of a concave mirror placed in air, the image coincides with the object if the object is $50\ \mathrm{cm}$ from the mirror. If the mirror is placed at a depth of $20\ \mathrm{cm}$ in a transparent medium, the image coincides with the object when the object is $40\ \mathrm{cm}$ from the mirror. The refractive index of the liquid is

(A) $\frac{5}{4}$
(B) $\frac{4}{3}$
(C) $\frac{3}{2}$
(D) $\frac{5}{3}$

Answer: (C) $\frac{3}{2}$ · Official APSCHE final key

Q156 AP EAMCET 2019 · 22 Apr · Shift 1 MCQ

A thin converging lens of focal length 25 cm forms a sharp image of an object on a screen placed at a distance of 75 cm from the lens. Later the screen is moved closer to the lens by a distance 25 cm. The distance through which the object is to be shifted so that its image on the screen is sharp again is

(A) 50 cm towards the lens
(B) 50 cm away from the lens
(C) 12.5 cm towards the lens
(D) 12.5 cm away from the lens

Answer: (D) 12.5 cm away from the lens · Official APSCHE final key

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Q157 AP EAMCET 2019 · 22 Apr · Shift 2 MCQ

In a spherical glass marble of radius $6\ \text{cm}$, a small air bubble is formed at $1\ \text{cm}$ from the centre of the marble. The apparent position of the air bubble from the nearest point on the surface of the marble is about (Refractive index of glass is 1.5)

(A) $3.3\ \text{cm}$
(B) $4.6\ \text{cm}$
(C) $5.4\ \text{cm}$
(D) $7.0\ \text{cm}$

Answer: (B) $4.6\ \text{cm}$ · Official APSCHE final key

Q158 AP EAMCET 2019 · 21 Apr · Shift 1 MCQ

A girl of height 150 cm with her eye level at 140 cm stands in front of a plane mirror of height 75 cm fixed to a wall. The lower edge of the mirror is at a height of 85 cm above her feet level. The height of her image the girl can see in the mirror is

(A) 130 cm
(B) 140 cm
(C) 120 cm
(D) 150 cm

Answer: (C) 120 cm · Official APSCHE final key

Q159 AP EAMCET 2019 · 21 Apr · Shift 2 MCQ

A small object is enclosed in a transparent solid sphere of radius 8 cm. The object is situated at 2 cm from the centre of the sphere. If its image appears to be at 3.2 cm from the nearest side then the refractive index of the material of the sphere is

(A) 1.62
(B) 1.45
(C) 1.55
(D) 1.50

Answer: (D) 1.50 · Official APSCHE final key

Q160 AP EAMCET 2019 · 20 Apr · Shift 1 MCQ

An object is placed 0.1 m infront of a convex lens of focal length 20 cm made of a material of refractive index 1.5. The surface of the lens away from the object is silvered. If the radius of curvature of the silvered surface is 22 cm, then the distance of the final image from the silvered surface is

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(A) 10 cm
(B) 11 cm
(C) 12 cm
(D) 13 cm

Answer: (B) 11 cm · Official APSCHE final key

Q161 AP EAMCET 2019 · 20 Apr · Shift 2 MCQ

An object is fixed at the bottom of a vessel and water is filled in the vessel upto a height of 10 cm. A plane mirror is placed at a height of 7 cm from the surface of water in such a way that its reflecting surface faces the water. The distance of the image from the mirror is (Refractive index of water = 1.33)

(A) $7.5\ \text{cm}$
(B) $7\ \text{cm}$
(C) $14.5\ \text{cm}$
(D) $21.8\ \text{cm}$

Answer: (C) $14.5\ \text{cm}$ · Official APSCHE final key

Q162 TS EAMCET 2018 · 7 May · Shift 1 MCQ

A printed page is kept pressed by a transparent cube of edge t. The refractive index of the cube varies as $\mu(z) = 1 + \frac{z}{t}$, where z is the vertical distance from bottom of the cube. If viewed from top the printed letters appear to be shifted by an amount

(A) $(1 - \ln 2)t$
(B) $(2\ln 2 - 1)t$
(C) $\frac{t}{2\ln 2}$
(D) $\frac{2t}{3\ln 2}$

Answer: (A) $(1 - \ln 2)t$ · The council's preliminary key

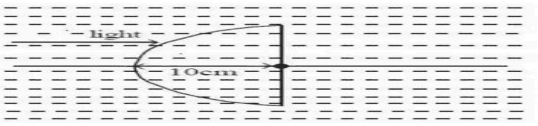
Q163 TS EAMCET 2018 · 7 May · Shift 1 MCQ

A half spherical glass lens with refractive index 1.5 is placed in a liquid with refractive index of 1.3 (see following figure). The radius of the half spherical lens is 10 cms. A parallel beam of light travelling in the liquid is refracted by the glass lens. The absolute value of the position of the image from the centre of the glass lens will be *(see the figure above)*

Question Number : 103 Question Id : 4928632663 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct : 1 Wrong : 0

A half spherical glass lens with refractive index 1.5 is placed in a liquid with refractive index of 1.3 (see following figure). The radius of the half spherical lens is 10 cms. A parallel beam of light travelling in the liquid is refracted by the glass lens. The absolute value of the position of the image from the centre of the glass lens will be

పటంలో చూపిన విధంగా, వక్రీభవన గుణకము 1.3 ఉన్న ద్రవంలో 1.5 వక్రీభవన గుణకమున్న ఒక అర్ధగోళాకార గాజు కటకంను ఉంచారు. అర్ధగోళాకార గాజు కటకం వ్యాసార్ధము 10 cms. ద్రవంలో ప్రయాణించు సమాంతర కాంతి పుంజము గాజు కటకం చేత వక్రీభవించింది. గాజు కటక కేంద్రము నుండి ప్రతిబింబం యొక్క స్థాన దరము ఎంత



Options :
1. 10 cm
2. 65 cm
3. 5 cm
4. 11.5 cm

A 10 cm

B 65 cm

C 5 cm

D 11.5 cm

Answer: (B) 65 cm · The council's preliminary key

Q164 TS EAMCET 2018 · 5 May · Shift 1 MCQ

Consider a point object situated at a distance of 30 cm from the centre of sphere of radius 2 cm and refractive index 1.5 as shown in the figure. If the refractive index of the region surrounding this sphere is 1.4, the position of the image due to refraction by sphere with respect to the centre is

A 30 cm

B 45 cm

C ∞

D 28 cm

Answer: (A) 30 cm · The council's preliminary key

Q165 TS EAMCET 2018 · 5 May · Shift 1 MCQ

At what distance from a biconvex lens of the focal length F, must be placed an object for the distance between the object and its real image to be minimal

(A) $2F$
(B) F
(C) $\frac{F}{2}$
(D) $4F$

Answer: (A) $2F$ · The council's preliminary key

Q166 TS EAMCET 2018 · 5 May · Shift 2 MCQ

Consider a concave mirror of $10\ \text{cm}$ focal length illuminated by an object kept at a distance of $25\ \text{cm}$. The distance at which the image is formed and its magnification respectively are

(A) $16.7\ \text{cm}$ and -0.67
(B) $7.1\ \text{cm}$ and 0.29
(C) $-16.7\ \text{cm}$ and 0.67
(D) $7.1\ \text{cm}$ and -0.29

Answer: (A) $16.7\ \text{cm}$ **and** -0.67 · The council's preliminary key

Q167 TS EAMCET 2018 · 5 May · Shift 2 MCQ

Two objects P and Q are placed at $10\ \text{cm}$ and $30\ \text{cm}$ in front of a convex lens of focal length $20\ \text{cm}$. The correct option for the image of P and Q is

(A) P - virtual and inverted ; Q - real and upright
(B) P - virtual and upright ; Q - real and inverted
(C) P - real and inverted ; Q - virtual and upright
(D) P - real and upright ; Q - virtual and inverted

Answer: (B) P **- virtual and upright ;** Q **- real and inverted** · The council's preliminary key

Q168 TS EAMCET 2018 · 4 May · Shift 1 MCQ

Where should an object be placed on the axis of a convex lens of focal length 8 cm so as to achieve magnification of -4 ? (Distances are measured from optic centre of the lens)

(A) -6 cm
(B) -10 cm
(C) -12 cm
(D) -9 cm

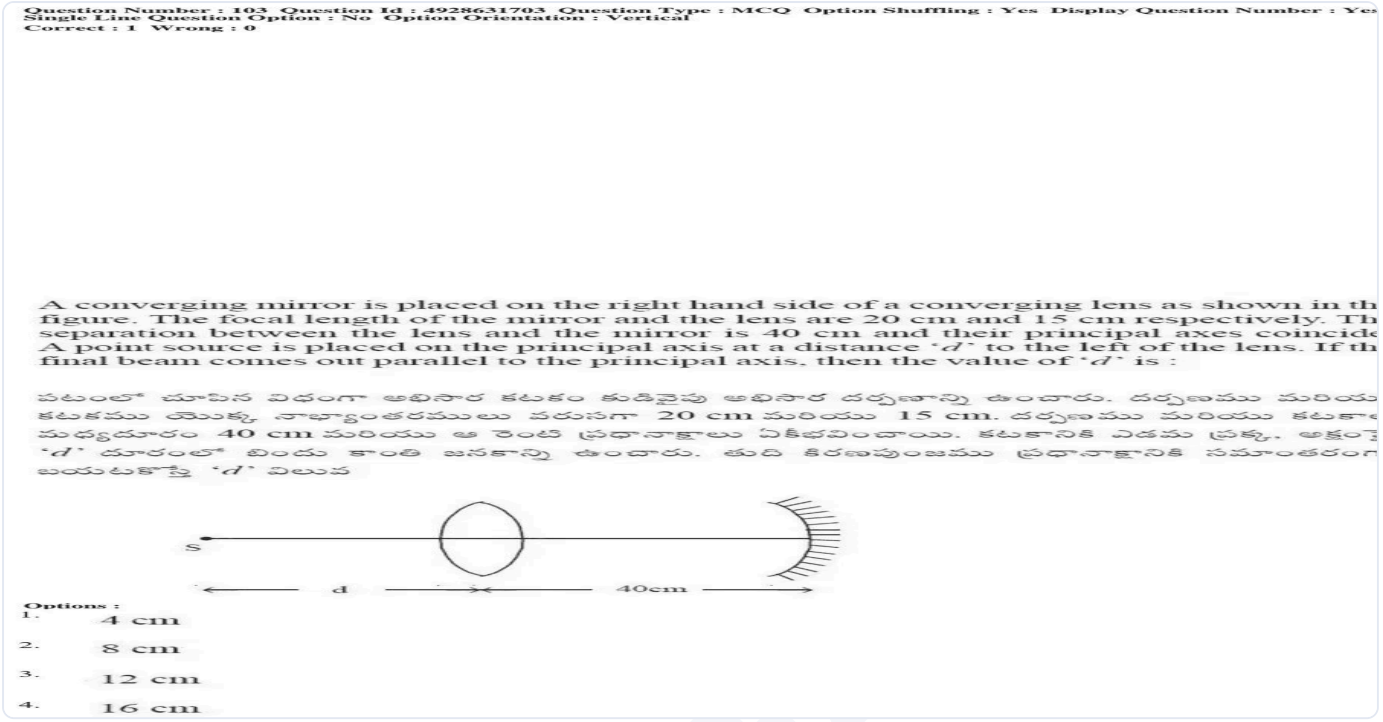
Answer: (B) -10 **cm** · The council's preliminary key

Q169 TS EAMCET 2018 · 4 May · Shift 1 MCQ

A converging mirror is placed on the right hand side of a converging lens as shown in the figure. The focal length of the mirror and the lens are 20 cm and 15 cm respectively. The separation between the

lens and the mirror is 40 cm and their principal axes coincide. A point source is placed on the principal axis at a distance 'd' to the left of the lens. If the final beam comes out parallel to the principal axis, then the value of 'd' is :

(see the figure above)



(A) 4 cm

(B) 8 cm

(C) 12 cm

(D) 16 cm

Answer: (C) 12 cm · The council's preliminary key

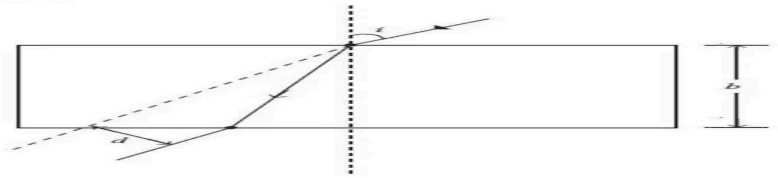
Q170 TS EAMCET 2018 · 4 May · Shift 2 MCQ

Figure shows a ray of light entering and passing through a dense glass slab and emerging from the other side. If the angle $i = 60^\circ$, slab thickness $b = 0.04$ m and the refractive index of glass $= \sqrt{3}$, the parallel shift 'd' between the emerging and entering rays in mm is

(see the figure above)

Question Number : 103 Question Id : 4923631862 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct : 1 Wrong : 0

Figure shows a ray of light entering and passing through a dense glass slab and emerging from the other side. If the angle $i = 60°$, slab thickness $b = 0.04$ m and the refractive index of glass $= \sqrt{3}$, the parallel shift 'd' between the emerging and entering rays in mm is



Options :
1. $\sqrt{\frac{3}{4}}$
2. $\sqrt{\frac{4}{3}}$
3. $\frac{40}{\sqrt{3}}$
4. $15\sqrt{3}$

(A) $\sqrt{\frac{3}{4}}$

(B) $\sqrt{\frac{4}{3}}$

(C) $\frac{40}{\sqrt{3}}$

(D) $15\sqrt{3}$

Answer: (C) $\frac{40}{\sqrt{3}}$ · The council's preliminary key

Q171 TS EAMCET 2018 · 4 May · Shift 2 MCQ

Let S_1 be the amount of Rayleigh scattered light of wavelength λ_1 and S_2 that of light of wavelength λ_2 from a particle of size 'a'. Which of the following statements is true

(A) $\frac{S_1}{S_2} = \left(\frac{\lambda_2}{\lambda_1}\right)^4$ if $\lambda_1, \lambda_2 \gg a$

(B) $\frac{S_1}{S_2} = \left(\frac{\lambda_1}{\lambda_2}\right)^4$ if $\lambda_1, \lambda_2 \gg a$

(C) $\frac{S_1}{S_2} = \left(\frac{\lambda_2}{\lambda_1}\right)^4$ if $\lambda_1, \lambda_2 \ll a$

(D) $\frac{S_1}{S_2} = \left(\frac{\lambda_1}{\lambda_2}\right)^4$ if $\lambda_1, \lambda_2 \ll a$

Answer: (A) $\frac{S_1}{S_2} = \left(\frac{\lambda_2}{\lambda_1}\right)^4$ if $\lambda_1, \lambda_2 \gg a$ · The council's preliminary key

Q172 AP EAMCET 2018 · 24 Apr · Shift 1 MCQ

Magnifying power of an astronomical telescope for normal adjustment is 10 and length of the telescope is 110 cm. Magnifying power of the same telescope when the image is formed at the near point is

(A) 14
(B) 18
(C) 23
(D) 26

Answer: (A) 14 · The council's preliminary key

Q173 AP EAMCET 2018 · 24 Apr · Shift 2 MCQ

For a prism, the angle of the prism is 60° and the refractive index is $\sqrt{\frac{7}{3}}$. The minimum possible angle of incidence so that the light ray is refracted from the second surface is ___

(A) 15°
(B) 25°
(C) 30°
(D) 35°

Answer: (C) 30° · The council's preliminary key

Q174 AP EAMCET 2018 · 23 Apr · Shift 1 MCQ

A lens forms real and virtual images of an object when the object is at u_1 and u_2 distances respectively. If the size of the virtual image is double that of the real image, then the focal length of the lens is (Take the magnification of the real image as 'm')

(A) $\left(\frac{u_1+u_2}{2}\right) m$
(B) $\left(\frac{u_1-u_2}{3}\right) 2m$
(C) $\left(\frac{u_1-u_2}{2}\right) 3m$
(D) $\left(\frac{u_1+u_2}{3}\right) 2m$

Answer: (B) $\left(\frac{u_1-u_2}{3}\right) 2m$ · The council's preliminary key

Q175 AP EAMCET 2018 · 23 Apr · Shift 2 MCQ

In a compound microscope, the focal lengths of two lenses are 1.5 cm and 6.25 cm. An object is placed at 2 cm from the objective and the final image is formed at 25 cm from the eye lens. The distance between the two lenses is _____ (in cm)

(A) 6
(B) 7.75
(C) 9.25
(D) 11

Answer: (D) 11 · The council's preliminary key

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Q176 AP EAMCET 2018 · 22 Apr · Shift 1 MCQ

A light ray incidents normally on one surface of an equilateral prism. The angle of deviation of the light ray is
(Refractive index of the material of the prism $= \sqrt{2}$)

(A) 60°
(B) 30°
(C) 0°
(D) 120°

Answer: (A) 60° · The council's preliminary key

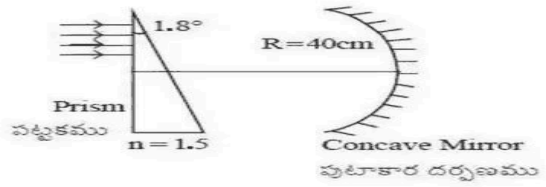
Q177 AP EAMCET 2018 · 22 Apr · Shift 2 MCQ

As shown in the figure, a parallel beam of light incidents on the upper part of a prism of angle 1.8° and material of refractive index 1.5. The light emerging out from the prism falls on a concave mirror of radius of curvature 40 cm. The distance of the point from the principal axis of the mirror where the light rays are focussed after reflection from the mirror is
(see the figure above)

Question Number : 102 Question Id : 4557343942 Question Type : MCQ Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

As shown in the figure, a parallel beam of light incidents on the upper part of a prism of angle 1.8° and material of refractive index 1.5. The light emerging out from the prism falls on a concave mirror of radius of curvature 40 cm. The distance of the point from the principal axis of the mirror where the light rays are focussed after reflection from the mirror is

1.8° కోణం మరియు పదార్థ వక్రీభవన గుణకం 1.5 గల ఒక పట్టక ఎగువ భాగాన పటంలో చూపిన విధంగా సమాంతర కాంతి కిరణపుంజం పతనం చెందింది. పట్టకం నుండి బహిర్గతమైన కాంతి 40 cm వక్రతా వ్యాసార్ధము గల ఒక పుటాకార దర్పణంపై పడుచున్నది. దర్పణం నుండి పరావర్తనం చెందిన తరువాత దర్పణ ప్రధానాక్షం నుండి కాంతి కిరణాలు కలుసుకొనే బిందువు దూరం



Options :
1. 4.76 cm
2. 1.57 mm
3. 3.14 mm
4. 6.28 mm

(A) 4.76 cm
(B) 1.57 mm
(C) 3.14 mm
(D) 6.28 mm

Answer: (C) 3.14 mm · The council's preliminary key

Q178 AP EAMCET 2018 · 22 Apr · Shift 2 MCQ

A microscope has an objective of aperture 8 mm and focal length of 5 cm. The minimum separation between two objects to be just resolved by the microscope is (Wavelength of light used $= 5500$ Å)

(A) $2.2\ \mu\text{m}$
(B) $3.4\ \mu\text{m}$
(C) $4.2\ \mu\text{m}$
(D) $3.6\ \mu\text{m}$

Answer: (C) $4.2\ \mu\text{m}$ · The council's preliminary key

Q179 TS EAMCET 2017 · 12 May · Offline MCQ

Consider a light source placed at a distance of 1.5 m along the axis facing the convex side of a spherical mirror of radius of curvature 1 m. The position (s'), nature and magnification (m) of the image are

(A) s' = 0.375 m, Virtual, upright, m = 0.25
(B) s' = 0.375 m, Real, inverted, m = 0.25
(C) s' = 3.75 m, Virtual, inverted, m = 2.5
(D) s' = 3.75 m, Real, upright, m = 2.5

Answer: (A) s' = 0.375 m, Virtual, upright, m = 0.25 · The council's preliminary key

Q180 TS EAMCET 2017 · 12 May · Offline MCQ

A beam of light propagating at an angle α_1 from a medium 1 through to another medium 2 at an angle α_2. If the wavelength of light in medium 1 is λ_1, the wavelength of light in medium 2, (λ_2), is

(A) $\frac{Sin\,\alpha_2}{Sin\,\alpha_1}\lambda_1$
(B) $\frac{Sin\,\alpha_1}{Sin\,\alpha_2}\lambda_1$
(C) $\left(\frac{\alpha_1}{\alpha_2}\right)\lambda_1$
(D) λ_1

Answer: (A) $\frac{Sin\,\alpha_2}{Sin\,\alpha_1}\lambda_1$ · The council's preliminary key

Q181 AP EAMCET 2017 · 26 Apr · Shift 1 MCQ

Two point sources S_1 and S_2 are 24 cm apart. Where should a convex lens of focal length 9 cm be placed in between them so that the images of both sources are formed at the same place ?

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(A) 8 cm
(B) 6 cm
(C) 10 cm
(D) 12 cm

Answer: (B) 6 cm · The council's preliminary key

Q182 AP EAMCET 2017 · 26 Apr · Shift 2 MCQ

A plano convex lens of material of refractive index μ_1 exactly fits into a plano concave lens of material of refractive index μ_2. If R is the radius of curvature of the curved surfaces of the lenses and the plane surfaces of the lenses are parallel, the focal length of the combination is _____

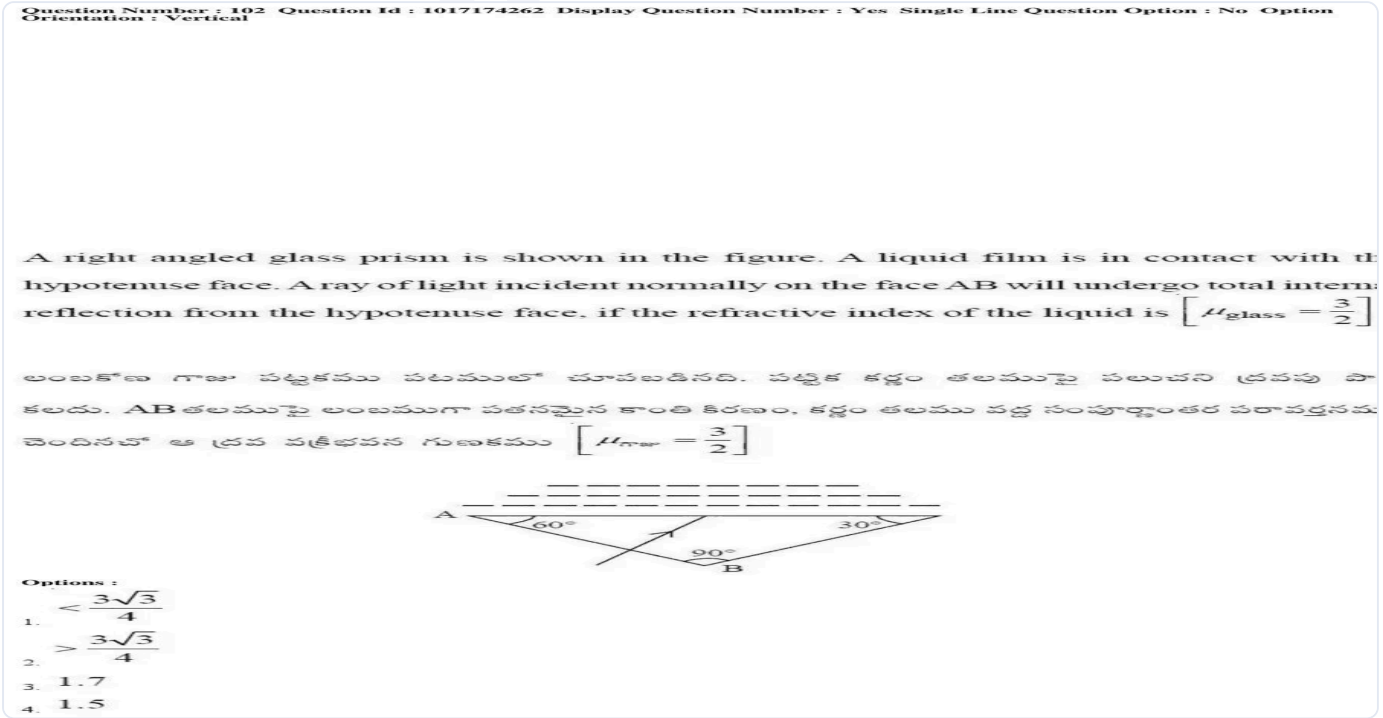
(A) $R(\mu_1 - \mu_2)$
(B) $\dfrac{R}{\mu_1 - \mu_2}$
(C) $\dfrac{\mu_1 - \mu_2}{R}$
(D) $\dfrac{1}{R(\mu_1 - \mu_2)}$

Answer: (B) $\dfrac{R}{\mu_1 - \mu_2}$ · The council's preliminary key

Q183 AP EAMCET 2017 · 25 Apr · Shift 1 MCQ

A right angled glass prism is shown in the figure. A liquid film is in contact with the hypotenuse face. A ray of light incident normally on the face AB will undergo total internal reflection from the hypotenuse face, if the refractive index of the liquid is $\left[\mu_{\text{glass}} = \dfrac{3}{2}\right]$

(see the figure above)



(A) $< \frac{3\sqrt{3}}{4}$

(B) $> \frac{3\sqrt{3}}{4}$

(C) 1.7

(D) 1.5

Answer: (A) $< \frac{3\sqrt{3}}{4}$ · The council's preliminary key

Q184 AP EAMCET 2017 · 25 Apr · Shift 2 MCQ

A glass prism of refracting angle 60° is immersed in a liquid in which angle of minimum deviation is 30°. The critical angle of glass with respect to the liquid medium is

(A) 30°

(B) 45°

(C) 60°

(D) 90°

Answer: (B) 45° · The council's preliminary key

Q185 AP EAMCET 2017 · 24 Apr · Shift 1 MCQ

The distance between an object and its real image formed by a lens is 'D'. If the magnification is 'm', the focal length of the lens is

(A) $\left(\frac{m-1}{m}\right) D$

(B) $\frac{mD}{m+1}$

(C) $\frac{(m-1)D}{m^2}$

(D) $\frac{mD}{(m+1)^2}$

Answer: (D) $\frac{mD}{(m+1)^2}$ · The council's preliminary key

Q186 AP EAMCET 2017 · 24 Apr · Shift 2 MCQ

Telescope has an objective of focal length 100 cm and an eyepiece of focal length 5 cm. The least distance of distinct vision is 25 cm. The telescope is focussed for distinct vision on a scale 3 m away from the objective. The magnification produced is _____

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(A) -3
(B) 1.5
(C) -5
(D) 5

Answer: (A) -3 · The council's preliminary key

Q187 TS EAMCET 2016 · 15 May · Offline MCQ

A thin convex lens of focal length 'f' made of crown glass is immersed in a liquid of refractive index μ_l. ($\mu_l > \mu_c$) where μ_c is the refractive index of the crown glass. The convex lens now is

(A) A convex lens of longer focal length
(B) A convex lens of shorter focal length
(C) A divergent lens
(D) A convex lens of focal length $(\mu_c - \mu_l)$ f

Answer: (C) A divergent lens · Official TGCHE final key

Q188 TS EAMCET 2016 · 15 May · Offline MCQ

Two convex lenses of focal lengths f_1 and f_2 form images with magnification m_1 and m_2, when used individually for an object kept at the same distance from the lenses. Then f_1/f_2 is

(A) $\frac{m_1(1+m_1)}{m_2(1+m_2)}$
(B) $\frac{m_1(1+m_2)}{m_2(1+m_1)}$
(C) $\frac{m_2(1+m_1)}{m_1(1+m_2)}$
(D) $\frac{m_2(1+m_2)}{m_1(1+m_1)}$

Answer: (B) $\frac{m_1(1+m_2)}{m_2(1+m_1)}$ · Official TGCHE final key

Q189 TS EAMCET 2016 · 15 May · Offline MCQ

With the help of a telescope that has an objective of diameter 200 cm, it is proved that light of wavelengths of the order of 6400 Å coming from a star can be easily resolved. Then the limit of resolution is

(A) 39×10^{-8} deg
(B) 39×10^{-8} rad
(C) 19.5×10^{-8} rad
(D) 19.5×10^{-8} deg

Answer: (B) 39×10^{-8} **rad** · Official TGCHE final key

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Q190 AP EAMCET 2016 · 29 Apr · Offline MCQ

An infinitely long rod lies along the axis of a concave mirror of focal length 'f'. The nearer end of the rod is at a distance u, (u > f) from the mirror. It's image will have a length

(A) $\frac{uf}{u+f}$
(B) $\frac{uf}{u-f}$
(C) $\frac{f^2}{u+f}$
(D) $\frac{f^2}{u-f}$

Answer: (D) $\frac{f^2}{u-f}$ · The council's preliminary key

Q191 AP EAMCET 2014 · 22 May · Offline MCQ

A convex lens has its radii of curvature equal. The focal length of the lens is f. If it is divided vertically into two identical plano-convex lenses by cutting it, then the focal length of the plano-convex lens is (μ = the refractive index of the material of the lens)

(A) f
(B) $\frac{f}{2}$
(C) $2f$
(D) $(\mu-1)f$

Answer: (C) $2f$ · The council's preliminary key

Q192 AP EAMCET 2014 · 22 May · Offline MCQ

A thin converging lens of focal length $f = 25$ cm forms the image of an object on a screen placed at a distance of 75 cm from the lens. The screen is moved closer to the lens by a distance of 25 cm. The distance through which the object has to be shifted so that its image on the screen is sharp again is

(A) 37.5 cm
(B) 16.25 cm
(C) 12.5 cm
(D) 13.5 cm

Answer: (C) 12.5 cm · The council's preliminary key

Q193 AP EAMCET 2013 · 10 May · Offline MCQ

The two surfaces of a concave lens, made of glass of refractive index 1.5 have the same radii of curvature R. It is now immersed in a medium of refractive index 1.75, then the lens

(A) becomes a convergent lens of focal length 3.5 R
(B) becomes a convergent lens of focal length 3.0 R
(C) changes as a divergent lens of focal length 3.5 R
(D) changes as a divergent lens of focal length 3.0 R

Answer: (A) becomes a convergent lens of focal length 3.5 R · The council's preliminary key

Q194 AP EAMCET 2013 · 10 May · Offline MCQ

A microscope consists of an objective of focal length 1.9 cm and eye piece of focal length 5 cm. The two lenses are kept at a distance of 10.5 cm. If the image is to be formed at the least distance of distinct vision, the distance at which the object is to be placed before the objective is (Least distance of distinct vision is 25 cm)

(A) 6.2 cm
(B) 2.7 cm
(C) 21.0 cm
(D) 4.17 cm

Answer: (B) 2.7 cm · The council's preliminary key

Q195 AP EAMCET 2012 · 12 May · Offline MCQ

The objective and eyepiece of an astronomical telescope are double convex lenses with refractive index 1.5. When the telescope is adjusted to infinity, the separation between the two lenses is 16 cm. If the space between the lenses is now filled with water and again telescope is adjusted for infinity, then the present separation between the lenses is

(A) 8 cm
(B) 16 cm
(C) 24 cm
(D) 32 cm

Answer: (D) 32 cm · Official APSCHE final key

Q196 AP EAMCET 2012 · 12 May · Offline MCQ

The dispersive powers of the materials of two lenses forming an achromatic combination are in the ratio of 4 : 3. Effective focal length of the two lenses is + 60 cm then the focal lengths of the lenses should be

(A) 20 cm, 25 cm

(B) 20 cm, - 25 cm

(C) 15 cm, 20 cm

(D) 15 cm, - 20 cm

Answer: (D) 15 cm, - 20 cm · Official APSCHE final key

Q197 AP EAMCET 2011 · 8 May · Offline MCQ

The focal length of a lens of dispersive power 0.45 which should be placed in contact with a convex lens of focal length 84 cm and dispersive power 0.21 to make the achromatic combination from the two lenses, in cm is :

(A) 45

(B) 90

(C) 180

(D) -180

Answer: (D) -180 · The council's preliminary key

Q198 AP EAMCET 2011 · 8 May · Offline MCQ

Which of the following statements are *true* in the context of a Compound Microscope ?
A) Each lens produces a virtual and inverted image
B) The objective has a very short focal length
C) The eyepiece is used as a simple magnifying glass
D) The objective and eyepiece are convex and concave lenses respectively

(A) (A), (B) and (D)

(B) (B) and (C)

(C) (A), (C) and (D)

(D) (B) and (D)

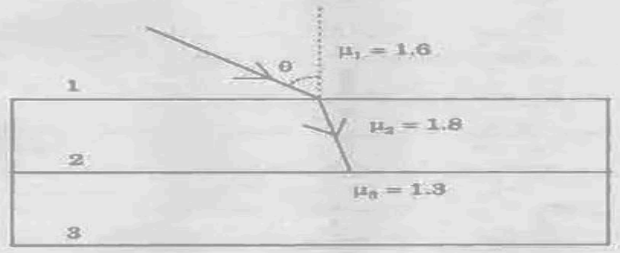
Answer: (B) (B) and (C) · The council's preliminary key

Q199 AP EAMCET 2011 · 8 May · Offline MCQ

A ray of light refracts from medium 1 into a thin layer of medium 2, crosses the layer and is incident at the critical angle on the interface between the medium 2 and 3 as shown in the figure. If the angle of incidence of ray is θ, the value of θ is :
(see the figure above)

109. A ray of light refracts from medium 1 into a thin layer of medium 2, crosses the layer and is incident at the critical angle on the interface between the medium 2 and 3 as shown in the figure. If the angle of incidence of ray is θ, the value of θ is :

ఒక కాంతి కిరణం యానకం 1 నుండి యానకం 2 యొక్క పలుచని పొరలోనికి వక్రీభవనం చెందిన తర్వాత దానిని దాటి యానకం 2 మరియు యానకం 3 ల మధ్య గల అంతర ఫలకంపై సంధిగ్ధ కోణం వద్దా పతనం చెందుతుంది. కాంతి కిరణం పతన కోణం θ అయితే, θ విలువ :



(1) $\sin^{-1}\left(\frac{8}{9}\right)$ (2) $\sin^{-1}\left(\frac{13}{18}\right)$

(3) $\sin^{-1}\left(\frac{13}{16}\right)$ (4) $\sin^{-1}\left(\frac{8}{13}\right)$

(A) $\sin^{-1}\left(\frac{8}{9}\right)$
(B) $\sin^{-1}\left(\frac{13}{18}\right)$
(C) $\sin^{-1}\left(\frac{13}{16}\right)$
(D) $\sin^{-1}\left(\frac{8}{13}\right)$

Answer: (C) $\sin^{-1}\left(\frac{13}{16}\right)$ · The council's preliminary key

Q200 AP EAMCET 2010 · 30 May · Offline MCQ

In an optical fibre, core and cladding were made with materials of refractive indices 1.5 and 1.414 respectively. To observe total internal reflection, what will be the range of incident angle with the axis of optical fibre ?

(A) 0°—60°
(B) 0°—48°
(C) 0°—30°
(D) 0°—82°

Answer: (C) 0°—30° · Official APSCHE final key

Q201 AP EAMCET 2010 · 30 May · Offline MCQ

A ray of light passes through an equilateral prism such that the angle of incidence is equal to the angle of emergence and each one is equal to 3/4th the angle of prism. The angle of deviation is :

(A) 45°
(B) 39°
(C) 20°
(D) 30°

Answer: (D) 30° · Official APSCHE final key

Q202 AP EAMCET 2010 · 30 May · Offline MCQ

The distance between field lens and eye lens in Ramsden eyepiece is 4 cm. Then, the distance of the cross-wires from the eye lens is :

(A) $1.5\ \text{cm}$
(B) $1.0\ \text{cm}$
(C) $5.0\ \text{cm}$
(D) $5.5\ \text{cm}$

Answer: (D) $5.5\ \text{cm}$ · Official APSCHE final key

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