PHYSICS

BOOKS - NEET PREVIOUS YEAR (YEARWISE + CHAPTERWISE)

OPTICS AND OPTICAL INSTRUMENTS

Others

1. A thin prism having refreacting angle 10° is made of galss refractive index 1.42. This prism

is combined with another thin prism glass of refractive index 1.7 This Combination profuces dispersion without deviation. The refreacting angle of second prishm should be

A. 4°

B. 6°

C. 8°

D. 10°

Answer: B

Watch Video Solution

2. The ration of resolving powers of an optical microscope for two wavelangths

$\lambda_1 = 4000\ \text{Å}\ \text{and}\ \lambda_2 = 6000\text{Å} is$

A. $8:27$

B. $9:4$

C. $3:2$

D. $16:81$

Answer: C

Watch Video Solution

3. A beam of light from a source L is incident normally on a plane mirror fixed at a certin distance x from the source. The beam is reflacted back as a spot on a scale placed just above the surce L. When the mirror is rotated through a small angle θ the spot of the light is found to move through a distance y on the scale. The angle θ is given by

A. $\frac{y}{2x}$

B. $\frac{y}{x}$

C. $\frac{x}{2y}$

D. $\frac{x}{y}$

Answer: A

Watch Video Solution

4. Young's double slit experiment is first performed in air and then in a medium other than air. It is found than 8th bright fringe in the medium lies where 5th daek fringe lies in

air. The re3fractive index of the medium is nearly

A. 1.25

B. 1.59

C. 1.69

D. 1.78

Answer: D

Watch Video Solution

5. Two Polaroids P_1 and P_2 are placed with their axis perpendicular to eachother. Unpolarised light I_0 is nicident on P_1. A third polaroid P_3 is kept in between P_1 and P_2 such that its axis makes an angle 45° with that of P_1. The intensity of transmitted light through P_2 is

A. $\frac{l_0}{2}$

B. $\frac{l_0}{4}$

C. $\frac{l_0}{8}$

D. $\frac{l_0}{16}$

Answer: C

Watch Video Solution

6. The intensity at the maximum in a Young's double slit experiment is I_0. Distance between two slits is $d = 5\lambda$, where λ is the wavelength of light used in the expermient. What will be that intensity infront of one of the slite on the

screen placed at a distance at a distance D=10 d ?

A. $\frac{lo}{2}$

B. $\frac{lo}{4}$

C. $\frac{lo}{8}$

D. $\frac{lo}{16}$

Answer: C

Watch Video Solution

7. In a diffraction pattern due to a single slit of width a, the firt minimum is observed at an angle 30° when light of wavelength 5000 Å is incident on the slit. The first secondary miximum is observed at an angle of

A. $\sin^{-1}\left(\frac{2}{3}\right)$

B. $\sin^{-1}\left(\frac{1}{2}\right)$

C. $\sin^{-1}\left(\frac{3}{4}\right)$

D. $\sin^{-1}\left(\frac{1}{4}\right)$

Answer: C

Watch Video Solution

8. A astronomical telescope has objective and eyepiece of focal lenghts 40 cm 4 cm respectively. To view an object 200 cm away from the objectiv, the lenses must be speparted by a distance

A. 46.0 cm

B. 50.0 cm

C. 54.0 cm

D. 37.3 cm

Answer: C

Watch Video Solution

9. Match the cprresponding entries of Coolumn 1 with Column 2. [Where m is the mangnification produced by the mirroe

$Column1$	$Column2$
$A.\ m = -2$	$a.$ Convex mirror
$B.\ m = -\frac{1}{2}$	$b.$ Convave mirror
$C.\ m = +2$	$c.$ Real image
$D.\ m = +\frac{1}{2}$	$d.$ Virtual image

A. $A \to a$ and c , $B \to a$ and $d, C \to a$ and $b, D \to c$

B. $A \to a$and $d, B \to b$andc,$C \to b$and $d, D \to b$

C. $A \to c$ and $d, B \to b$ and $d, C \to b$ and $c, D \to a$

D. $A \to c$and $c, B \to b$andc,$C \to b$and $d, D \to a$

Answer: D

View Text Solution

10. The angel of incidence for a fay of light at a refracting sufrace of a prism is 45°. The angle of prism is 60° If the ray suffers minimum deviation through the prism, the angle of minimum deviation and refractive index of the material of the prism repectively, are

A. $30^\circ, \sqrt{2}$

B. $45^\circ, \sqrt{2}$

C. $30^\circ, \dfrac{1}{\sqrt{2}}$

D. $45^\circ, \frac{1}{\sqrt{2}}$

Answer: A

Watch Video Solution

11. Two identical glass $(\mu_g = 3/2)$ equi-convex lenses of focal length f each are kept in contact. The space between the two lenses aiisolfilled with water $(\mu_g = 4/3)$. The focal length of the combination is

A. $f/3$

B. f

C. $\frac{4f}{3}$

D. $\frac{3f}{4}$

Answer: D

Watch Video Solution

12. An air bubble in a glass slab with refractive index 1.5 (near normal incidence) is $5cm$ deep when viewed from one surface and $3cm$ deep

when viewed from the opposite face. The thickness (in cm) of the slab is

A. 8

B. 10

C. 12

D. 16

Answer: C

Watch Video Solution

13. The interference pattern is obtained with two coherent light sources of intensity ratio n. In the interference patten, the ratio $\frac{I_{\max} - I_{\min}}{I_{\max} + I_{\min}}$ will be

A. $\frac{\sqrt{n}}{n+1}$

B. $\frac{2\sqrt{n}}{n+1}$

C. $\frac{\sqrt{n}}{n+1^2}$

D. $\frac{2\sqrt{n}}{n+1^2}$

Answer: B

Watch Video Solution

Watch video solution

14. A person can see objects clearly only when they lie between $50cm$ and $400cm$ from his eyes. In order to increase the maximum distance of distinct vision to infinity, the type and power of the correcting lens, the person has to use, will be

A. $convex, \ +2.25diopter$

B. $concave, \ -0.25diopter$

C. $convex \ -0.2diopter$

D. $convex, +0.15 diopter$

Answer: B

Watch Video Solution

15. A linear aperture whose width is $0.02cm$ is placed immediately in front of a lens of focal length $60cm$. The aperture is illuminated normally by a parallel beam of wavelength $5 \times 10^{-5} cm$. The distance of the first dark

band of the diffraction pattern from the centre of the screen is

A. $0.10cm$

B. $0.25cm$

C. $0.20cm$

D. $0.15cm$

Answer: D

Watch Video Solution

16. Two identical thin planoconvex glass lenses (refractive index 1.5) each having radius of curvature of $20cm$ are placed with their convex surfaces in contact at the centre. The intervening space is filled with oil of refractive index 1.7. The focal length of the combination is

A. $-20cm$s

B. $-25cm$

C. $-50cm$

D. $50cm$

Answer: C

Watch Video Solution

17. For a parallel beam of monochromatic. Light of wavelength $'\lambda'$ diffraction is produced by a single slit whose width 'a' is of the order of the wavelength of the lightl. If 'D' is the distance of the screen from the slit, the width of the central maxima will be

A. $\frac{2D\lambda}{a}$

B. $\frac{D\lambda}{a}$

C. $\frac{Da}{\lambda}$

D. $\frac{2Da}{\lambda}$

Answer: A

Watch Video Solution

18. In a double slit experiment, the two slits are $1mm$ apart and the screen is placed $1m$ away. A monochromatic light of wavelength

$500nm$ is used. What will be the width of each slit for obtaining ten maxima of double slit within the central maxima of single-slit pattern?

A. $0.2mm$

B. $0.1mm$

C. $0.5mm$

D. $0.02mm$

Answer: A

Watch Video Solution

19. The refracting angle of a prism is A, and refractive index of the material of the prism is cot $(A/2)$. the angel of minimum deviation is

A. $180^\circ - 3A$

B. $180^\circ - 2A$

C. $90^\circ - A$

D. $180^\circ + 2A$

Answer: B

Watch Video Solution

20. In an astronomical telescope in normal adjustment a straight black line of length L is draw on inside part of objective lens. The eye.piece forms a real image of this line. The length of this image is I. The magnification of the telescope is

A. $\frac{L}{l} + 1$

B. $\frac{L}{l} - 1$

C. $\frac{L+1}{L-1}$

D. $\frac{L}{l}$

Answer: D

Watch Video Solution

21. Two slits in Youngs experiment have widths in the ratio 1: 25.h The ratio of intensity at the macxima and minima in the interderence pattern $\frac{I_{\max}}{I_{\min}} is$ is

A. $\frac{9}{4}$

B. $\frac{121}{49}$

C. $\frac{49}{121}$

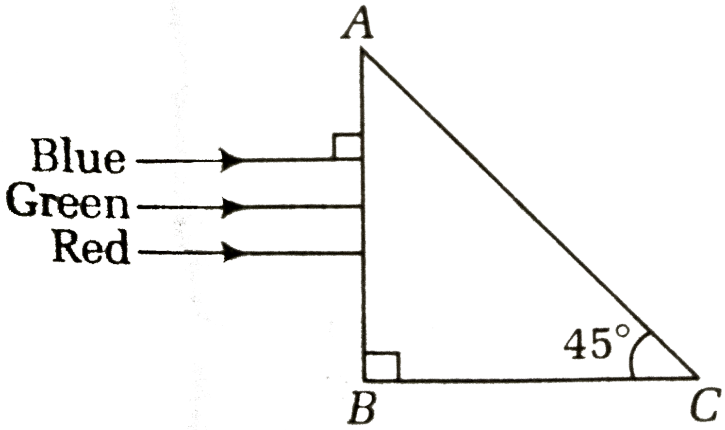
D. $\frac{4}{9}$

Answer: A

Watch Video Solution

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

respectively.



A. separate the blue colour part from the red and green colours

B. separate all the three colours from one another

C. not separtate the three colours at all

D. separate the red colour part from the green and blue colours

Answer: D

Watch Video Solution

23. At the first minimum adjacent to the central maximum of a single slit diffraction pattern, the phase difference between the Huygen's theh wavelet from the edge of the slit and the wavelet from the edge of the slit

and the wavelet from the edge of the slit and the wavelet from the midpoint of the slit is

A. $\frac{\pi}{4}$ radian

B. $\frac{\pi}{2}$ radian

C. π radian

D. $\frac{\pi}{8}$ radian

Answer: C

View Text Solution

24. The Young's modulus of steel is twice that of brass. Two wires of the same length and of the same area of cross section, one of steel and another of brass are suspended from the same roof. If we want the lower ends of the wires to be at the same level, then the weight added to the steel and brass wires must be in the ratio of

A. $1:2$

B. $2:1$

C. $4:1$

D. $1:1$

Answer: B

Watch Video Solution

25. Light with an enargy flux of $25 \times 10^4 Wm^{-2}$ falls on a perfectly reflecting surface at normal incidence. If the surface area is $15cm^2$, the average force exerted on the surface is

A. $1.25 \times 10^{-6} N$

B. $2.50 \times 10^{-6} N$

C. $1.20 \times 10^{-6} N$s

D. $3.0 \times 10^{-6} N$

Answer: B

Watch Video Solution

26. A beam of light of $\lambda = 600$ nm from distant source falls on a single slit 1 mm wide and th resulting diffraction pattern is observed on a screen 2 m away. The distance

between first dark frenges on either side of the central bright fringe is

A. $1.2cm$

B. $1.2mm$

C. $2.4cm$

D. $2.4mm$

Answer: D

Watch Video Solution

27. In a Young's double slit experiment the intensity at a point where tha path difference is $\frac{\lambda}{6}$ (λ being the wavelength of light used) is I. If I_0 denotes the maximum intensity, $\frac{I}{I_0}$ is equal to

A. K

B. $K/4$

C. $K/2$

D. $zero$

Answer: C

Watch Video Solution

28. If the length of objective lens in increased, then magnifying power of

A. microscpoe sili increase but that of telescope decrease

B. microscope and telescope both will increase

C. microscope and telescope both will decrease

D. microscope will decrease but that of telescope will increase

Answer: D

View Text Solution

29. Angle of prism is A and its one surface is silvered. Light rays falling at an angle of incidence $2A$ on first surface return back through the same path after suffering

reflection at second silvered surface. Refraction index of the material of prism is

A. $2\sin A$

B. $2\cos A$

C. $\frac{1}{2}\cos$

D. $\tan A$

Answer: B

Watch Video Solution

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

A. $\dfrac{R}{2(\mu_1 + 2\mu_2)}$

B. $\dfrac{B}{2(\mu_1 - 2\mu_2)}$

C. $\dfrac{R}{2(\mu_2 - 2\mu_1)}$

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

Answer: C

Watch Video Solution

31. For a normal eye, the cornea of eye provides a converging power of $40D$ and the least converging power of the eye lens behind the cornea is $20D$. Using this information, the distance between the retina and the cornea eye lens can be estimated to be

A. $5cm$

B. $2.5cm$

C. $1.67cm$

D. $1.5cm$

Answer: C

Watch Video Solution

32. In Young's double-slit experiment, the slits are $2mm$ apart and are illuminated by photons of two wavelengths $\lambda_1 = 12000\text{Å}$

and $\lambda_2 = 10000\text{Å}$. At what minimum distance from the common central bright fringe on the screen $2m$ from the slit will a bright fringe from one interference pattern coincide with a bright fringe from the other?

A. $8mm$

B. $6mm$

C. $4mm$

D. $3mm$

Answer: B

Watch Video Solution

33. When a biconvex lens of glass having refractive index 1.47 is dipped in a liquid, it acts as a plane sheet of glass. This implies that the liquid must have refractive index.

A. equal to that of glass

B. less than one

C. greater than that of glass

D. less then that of glass

Answer: A

Watch Video Solution

34. A ray of light is incident at small angle I on the surface of prism of small angle A and emerges normally from the oppsite surface. If the refractive index of the material of the prism is mu, the angle of incidence is nearly equal to

A. μA

B. $\frac{\mu A}{2}$

C. A/μ

D. $A/2\mu$

Answer: A

Watch Video Solution

35. A concave mirrorr of focal length f_1 is placed at a distance of d from a convex lens of focal length f_2. A beam of light coming from infinity and falling on this convex lens-concave

mirrorr combination returns to infinity. The distance d must equal.

A. $f_1 + f_2$

B. $-f_1 + f_2$

C. $2f_1 + f_2$

D. $-2f_1 + f_2$

Answer: C

Watch Video Solution

36. The magnifying power of a telescope is 9. When it is adjusted for parallel rays the distance between the objective and eyepiece is $20cm$. The focal lengths of lenses are

A. $10cm, 10cm$

B. $10cm, 5cm$

C. $18cm, 2cm$

D. $11cm, 9cm$

Answer: C

Watch Video Solution

Watch video solution

37. A biconvex lens has a radius of curvature of magnitude $20cm$. Which one of the following options describes best the image formed of an object of height $2cm$ place $30cm$ from the lens ?

A. Virtual, upright, height= $0.5cm$

B. Real, inverted, height=$4cm$

C. Real, inverted, height =$1cm$

D. Virtual, upright, height=$1cm$

Answer: B

Watch Video Solution

38. Which of the following is not due to total internal reflection ?

A. Difference between apparent and real depth of a pond

B. Mirage on hot summer days

C. Brilliance of diamond

D. Working of optical fiber

Answer: A

Watch Video Solution

39. A ray of light travelling in a transparent medium f refractive index μ, falls on a surface separating the medium from air at an angle of incidence of 45°. For which of the following value of μ the ray can undergo total internal reflection ?

A. $\mu = 1.33$

B. $\mu = 1.40$

C. $\mu = 1.50$

D. $\mu = 1.25$

Answer: C

Watch Video Solution

40. A lens having focal length f and aperture of diameter d forms an image of intensity I. Aperture of diameter $d/2$ in central region of

lens is covered by a black paper. Focal length of lens and intensity of image now will be respectively

A. f and $\frac{l}{4}$

B. $\frac{3f}{4}$ and $\frac{l}{2}$

C. f and $\frac{3l}{4}$

D. $\frac{f}{2}$ and $\frac{l}{2}$

Answer: C

Watch Video Solution

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

A. $9.2 \times 10^{-4} m$

B. $6.5 \times 10^{-4} m$

C. $6.5 \times 10^{-5} m$

D. $12.4 \times 10^{-4} m$

Answer: A

Watch Video Solution

42. Two thin lenses of focal length f_1 and f_2 are in contact and coaxial. The power of the combination is

A. $\sqrt{\frac{f_1}{f_2}}$

B. $\sqrt{\frac{f_2}{f_1}}$

C. $\frac{f_1 + f_2}{2}$

D. $\frac{f_1 + f_2}{f_1 f_2}$

Answer: D

Watch Video Solution

43. The frequency of a light wave in a material is $2 \times 10^{14} Hz$ and wavelength is 5000Å. The refractive index of material will be

A. 1.40

B. 1.50

C. 3.00

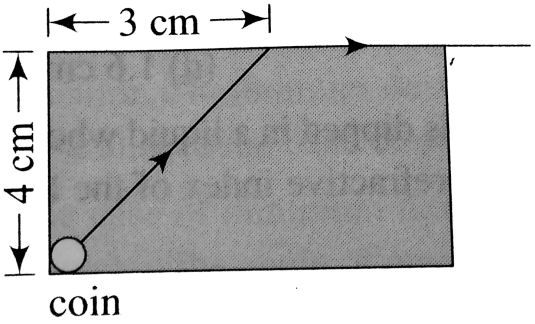
D. 1.33

Answer: C

Watch Video Solution

44. A small coin is resting on the bottom of a beaker filled with a liquid. A ray of light from the coin travels up to the surface of the liquid and moves along its surface (see figure).

How fast is the light travelling in the liquid ?



A. $1.8 \times 10^8 m/s$

B. $2.4 \times 10^8 m/s$

C. $3.0 \times 10^8 m/s$

D. $1.2 \times 10^4 m/s$

Answer: A

Watch Video Solution

45. A convex lens and a concave lens, each having same focal length of $25cm$, are put in contact to form a combination of lenses. The power in diopters of the combination is

A. 25

B. 50

C. infinite

D. zero

Answer: D

Watch Video Solution

46. A microscope is focused on a mark on a piece of paper and then a slab of glass of thickness $3cm$ and refractive index 1.5 is placed over the mark. How should the microscope be moved to get the mark in focus again ?

A. 1cm upward

B. 4.5 cm downward

C. 1cm downward

D. 2 cm upward

Answer: A

Watch Video Solution

47. The angular resolution of a $10cm$ diameter telescope at a wavelength 5000Å is of the order

A. $10^6 rad$

B. $10^{-2} rad$

C. $10^{-4} rad$

D. $10^{-6} rad$

Answer: D

Watch Video Solution

48. A telescope has an objective lens of $10cm$ diameter and is situated at a distance of one kilometre from two objects. The minimum distance between these two objects, which can

be resolved by the telescope, when the mean wavelength of light is 5000Å, of the order of

A. 0.5 m

B. 5 m

C. 5 mm

D. 5 cm

Answer: C

Watch Video Solution

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

A. 45°

B. 60°

C. 0°

D. 30°

Answer: A

Watch Video Solution

50. A beam of light composed of red and green ray is incident obliquely at a point on the face of rectangular glass slab. When coming out on the opposite parallel face, the red and green ray emerge form

A. two opints propagating in two different non-parallel directions

B. two points propagating in two different parallel directions

C. one point propagating in two different directions

D. one point propagating in the same direction

Answer: B

Watch Video Solution

51. A convex lens is dipped in a liquid whose refractive index is equal to the refractive of the lens. Then its focal length will

A. become smallm, but non-zero

B. remain unchanged

C. become zero

D. become infinite

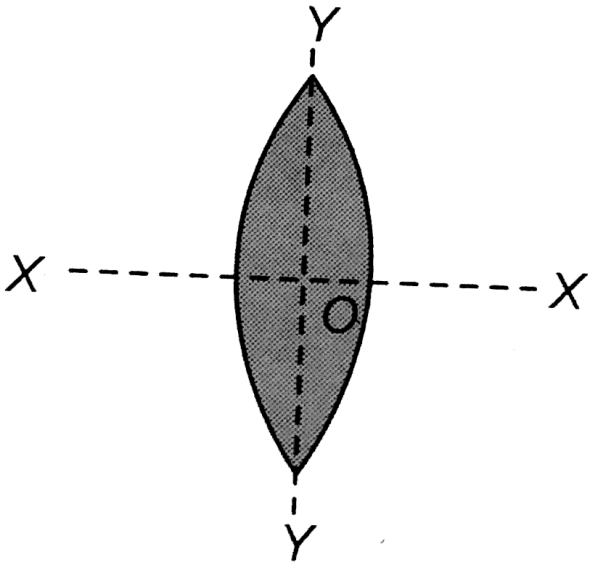
Answer: D

Watch Video Solution

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

Choose the correct statement from the

following



A. $f' = f, f'' = f$

B. $f = 2f, f'' = 2f$

C. $f' = f, f'' = 2f$

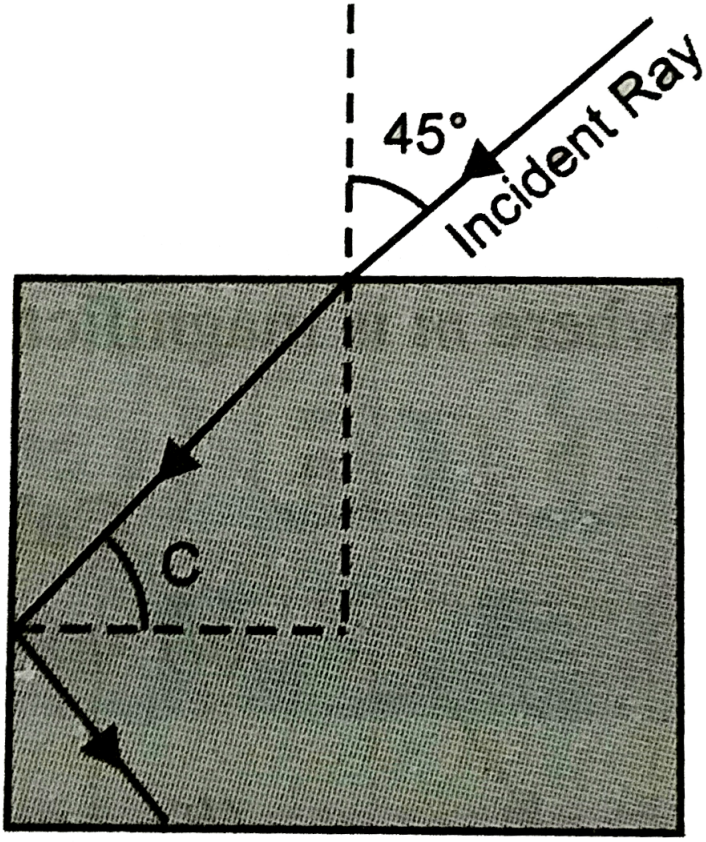
D. $f' = 2f, f'' = f$

Answer: C

Watch Video Solution

53. For a given incident ray as shown in Fig., the condition of total internal reflection of ray will be satisfied if the refractive index of the

block will be.



A. $\frac{\sqrt{3}+1}{2}$

B. $\frac{\sqrt{2}+1}{2}$

C. $\sqrt{\frac{3}{2}}$

D. $\sqrt{\frac{7}{6}}$

Answer: C

Watch Video Solution

54. A body is located on a wall. Its image of equal size is to be obtained on a parallel wall with the help of a convex leng. The lens is placed at a distance d ahead of second wall, then the required focal length will be:

A. $only \frac{d}{4}$

B. $only \frac{d}{2}$

C. more than $\frac{d}{4}$ but less than $\frac{d}{2}$

D. "less then" $\frac{d}{4}$

Answer: B

Watch Video Solution

55. The diameter of human eye lens is $2mm$. What should be the minimum separation between two points situated at $50m$ from eye,

to resolve tham. Take wavelength of light $= 5000\text{Å}$.

A. 2.32 m

B. 4.28 mm

C. 1.25 mm

D. 12.48 cm

Answer: C

Watch Video Solution

56. Tranmission of light in optical fibre is due to

A. scattering

B. diffaction

C. polarisation

D. multiple total internal reflactions

Answer: D

View Text Solution

57. Which of the following pheniomeana exhibits particle nature of light ?

A. interference

B. diffraction

C. polarisaation

D. photoelectric effect

Answer: D

Watch Video Solution

58. A transparent cube contains a small air bubble. Its apparent distance is 2 cm when seen through other facel. If the refractive index of the material of the cube is 1.5, the real length of the edge of cube must be

A. 7 cm

B. 7.5 cm

C. 10.5 cm

D. $\frac{14}{3}$ cm

Answer: C

Watch Video Solution

59. A planocovex lens is made of a material of refractive in $\mu = 1.5$ The radius of curvature of curved surface of the lens is 20.cm. If its plane surface3 is silvered, the focal length of the silvered lens will be

A. $10cm$

B. $20cm$

C. $40cm$

D. $80cm$

Answer: B

Watch Video Solution

60. A man is 6 ft tall In order to see his entire image, he requires a plane mirror of minimum length equal to

A. $6ft$

B. $12ft$

C. $2ft$

D. $3ft$

Answer: D

Watch Video Solution

61. Rainbows are formed by

A. reflection and diffraction

B. refraction and scattering

C. dispersion and total internal reflection

D. interference only

Answer: C

Watch Video Solution

62. The wavelength of light of frequence

A. $2 \times 10^6 m$

B. $3 \times 10^6 m$

C. $4 \times 10^6 m$

D. $5 \times 10^6 m$

Answer: B

Watch Video Solution

63. The refractive index of the material of prism $\sqrt{3}$, then the angle os minimum deviation of prism is

A. 30°

B. 45°

C. 60°

D. 75°

Answer: C

Watch Video Solution

64. Aplanoconvex lens is made of material of refactive index 1.6 The radius olf curvature of the curred surface is 60 cm. The facal length of the lens is

A. $50cm$

B. $100cm$

C. $200cm$

D. $400cm$

Answer: B

Watch Video Solution

65. Coloujrs of thin soap bubbles are due to

A. refraction

B. dispersion

C. interference

D. diffractions

Answer: C

Watch Video Solution

66. Light enters at an angle of incidance in a tranjsparent road of refractve index μ. for what value of the refractive index of the material of the rod the light once entered into it will not leave it through its lateral face whatsoever be the value of angle of incidance ?

A. $\mu > \sqrt{2}$

B. $\mu = 1$

C. $\mu = 1.1$

D. $\mu = 1.3$

Answer: A

Watch Video Solution

67. A luminous object is placed at a distance of 30 cm. from the convex lens of focal length 20 cm. On the other side of the lens, at what

distance from the lens, a convex mirror of radius of curvture 10 cm. be polaced in order to have an upright image of the object coincident with it ?

A. 12 cm

B. 30 cm

C. 50 cm

D. 60 cm

Answer: C

Watch Video Solution

68. Electromagnetic radition of frequency v, velocity v and wavelength λ in air, enters a glass slab of refractive index mu. The frequency, wavelength and velocity of light in the glass slab will be, respectively

A. $\frac{v}{\mu}, \frac{\lambda}{\mu}, v$

B. $v, \lambda \frac{v}{\mu}$

C. $v, \frac{\lambda}{\mu}, \frac{v}{\mu}$

D. $\frac{v}{\mu}, \frac{\lambda}{\mu}, \frac{v}{\mu}$

Answer: C

Watch Video Solution

69. An astronomical telescope if ten -fold angular magnification has a length of 44 cm. The focal length of the objective is

A. 440 cm

B. 44 cm

C. 40 cm

D. 4 cm

Answer: C

Watch Video Solution

70. The focal lengths of a converging lens measured for violet, green and red colours of $fv'\, f_G'\, f_R$ respectively. We will find

A. $f_G > f_R$

B. $f_v < f_R$

C. $f_V > fR$

D. $f_V = f_R$

Answer: B

Watch Video Solution

71. If $f(V)$ and f_R are the focal lengths of a concex lens for violet and red light respectively and $F_V$and F_R are the focal lengths of concave lens for violet and red light respectively, then we have

A. $f_V > f_R$and $F_V > F_R$

B. $f_V < f_R$and $F_V < F_R$

C. $f_V > f_R$and $F_V > F_R$

D. $f_V > f_R$and $F_V < F_R$

Answer: A

Watch Video Solution

72. Onc face of a rectangular glass plate 6 cm thick is silcerd. An object held 8 cm in front of the first face, froms an image 12 cm behind the silvered face. The refractive index of the glass is

A. 0.4

B. 0.8

C. 1.2

D. 1.6

Answer: C

Watch Video Solution

73. Light travels through a glass plate of thickness t and refractive index μ. If c is the

speed of light in vacuum, the time taken by light to travel this thickness of glass is

A. μtc

B. $\frac{tc}{\mu}$

C. $\frac{1}{\mu t}$

D. $\frac{\mu t}{c}$

Answer: D

Watch Video Solution

74. A convex lens of focal length 80 cm and a concave lens of focal length 50 cm are combined toghether. What will be their resulting power ?

A. $+6.5D$

B. $-6.5D$

C. $+7.5D$

D. $-0.75D$

Answer: D

Watch Video Solution

Watch video solution

75. A lens if placed between a source of light and a wall. It forms images of area A_1 and A_2 on the wall for its two different positions. The area of the source or light is

A. $\sqrt{A_1 A_2}$

B. $\frac{A_1 + A_2}{2}$

C. $\frac{A_1 - A_2}{2}$

D. $\frac{1}{A_1} + \frac{1}{A_2}$

Answer: A

Watch Video Solution

76. If two mirrors are kept at 60° to each other, then the number of images formed by them is

A. six

B. five

C. four

D. three

Answer: B

Watch Video Solution

77. The hypermetropia is a

A. short-sight defect

B. long-sight defect

C. bad vision due to old age

D. None of the above

Answer: B

Watch Video Solution

78. An echlromatic combination of lenses is formed by joining

A. 2 convex lenses

B. 2 convex lenses

C. 1 convex, 1 concave lens

D. 1 convex and 1 plane mirror

Answer: C

Watch Video Solution

79. Focal length of convex lens will miximum for

A. blue light

B. yellow light

C. green light

D. red light

Answer: D

Watch Video Solution

80. Deviation δ produced by a prism of angle A, which is assumed to be small, made of a material of refractive index μ is given by

A. $\delta = (\mu - 1)A$

B. $\delta = (\mu + 1)A$

C. $\dfrac{\frac{\sin A + \delta}{2}}{\frac{\sin(A)}{2}}$

D. $\delta = \dfrac{\mu - 1}{\mu + 1}$

Answer: A

Watch Video Solution

81. A point soujrce of light is placed 4 m below the surface of water of refractive index $\frac{5}{3}$. The minimum diameter of a disc, which should be placed over the source, on the surface of water to cut off alol light coming out of water is

A. infinite

B. $6m$

C. $4m$

D. $3m$

Answer: B

Watch Video Solution

82. Time taken by sunlight to pass through a window of thickness $4mm$ whose refraactive index is $\frac{3}{2}$, is

A. $2 \times 10^{-4} S$

B. $2 \times 10^{-8} S$

C. $2 \times 10^{-11} S$

D. $2 \times 10^{11} S$

Answer: C

Watch Video Solution

83. These is a prism with refractive index equal to $\sqrt{2}$ and the refracting angle equal to 30° Once of therefracting surface of the pricm is polished. A beam of monochromatic wil

retrace its path if its angle of incfidence over the refracting

A. 0°

B. 30°

C. 45°

D. 60°

Answer: C

Watch Video Solution

84. A beam of monochromatic light is refacted from vacuum into a medium of refracticve index 1.5 The wavelength of refracted light will be

A. dependent on intensity of refracted light

B. same

C. smaller

D. large

Answer: C

Watch Video Solution

Watch Video Solution

85. Pick out the longest wavelength from the following types of radiations

A. blue light

B. gamma rays

C. X-rays

D. red light

Answer: D

Watch Video Solution

86. A ray is ihncident at an angle of incidence ii on one surface of a prism of small angle A and emerge normally from opposite surface. If the refractive index of the material of prism is μ. the angel of incidance I is nearly equal to

A. $\frac{A}{\mu}$

B. $\frac{A}{2\mu}$

C. μA

D. $\frac{\mu A}{2}$

Answer: C

Watch Video Solution

87. Ray optics is valid, when characteristic dimensions are

A. of the same order as the wavelength of light

B. much smaller than wavelength of light

C. of thr order of one millimeter

D. much large than the waveiength of light

Answer: D

Watch Video Solution

88. Interference is possible in

A. light waves only

B. sound waves only

C. Both light and sound waves

D. Neither light nor sound waves

Answer: C

Watch Video Solution

89. Focal length of a convex lens of refractive index 1.5 is 2 cm. Focal length of lens when immersed in a liquid of refractive index 1.25 will be

A. $10cm$

B. $2.5cm$

C. $5cm$

D. $7.5cm$

Answer: C

Watch Video Solution

90. Which of the following phenomenon is not common to sound and light waves ?

A. interference

B. diffaction

C. Coherence

D. Polarisation

Answer: D

Watch Video Solution

91. Which of the following phenomenon is not explanined by Huygen's construction of wavefront ?

A. Refractin

B. Reflection

C. Diffraction

D. Origin of spectra

Answer: D

Watch Video Solution