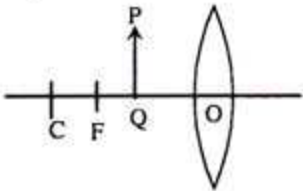
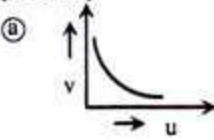
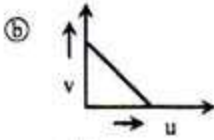
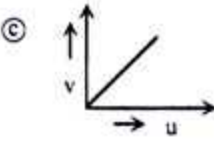
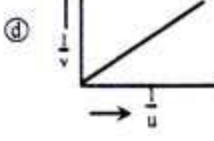
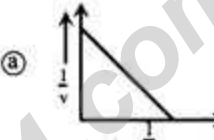
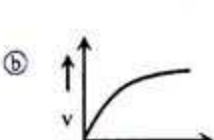
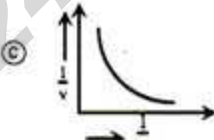
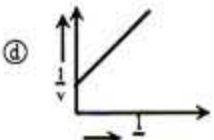


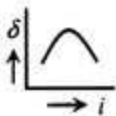
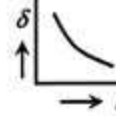
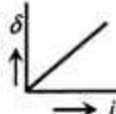
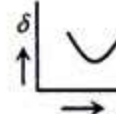
Chapter Six : Geometrical Optics

- Momentum of light decreases 15% as it enters a medium from air. Find the refractive index then — [R.B. -17, S.B. -15]
 - 1.18
 - 1.21
 - 1.33
 - 1.50
- If refractive index of diamond is 2.4 then what's the speed of light in diamond?
 - $1.55 \times 10^8 \text{ m}\cdot\text{s}^{-1}$
 - $1.5 \times 10^8 \text{ m}\cdot\text{s}^{-1}$
 - $1.2 \times 10^8 \text{ m}\cdot\text{s}^{-1}$
 - $1.25 \times 10^8 \text{ m}\cdot\text{s}^{-1}$
- Absolute Refractive index of water is 1.33. yellow light of frequency $5.17 \times 10^{14} \text{ Hz}$ is entering water from the vacuum. Find the frequency in water?
 - $2.88 \times 10^8 \text{ Hz}$
 - $3.89 \times 10^{14} \text{ Hz}$
 - $5.17 \times 10^{14} \text{ Hz}$
 - $6.88 \times 10^{14} \text{ Hz}$
- Which is Lens Maker Equation? [Ctg. B. -15]
 - $\frac{1}{v} + \frac{1}{u} = \frac{1}{f}$
 - $\frac{1}{f} = (\mu - 1) \left(\frac{1}{r_1} - \frac{1}{r_2} \right)$
 - $\frac{\mu}{v} + \frac{1}{u} = \frac{\mu - 1}{r}$
 - $m = \frac{v}{u} \left(1 - \frac{D}{f} \right)$
- Refractive index of a plano-convex lens is 1.5 and focal length 10cm, so radius of curvature —
 - 10 cm
 - 5 cm
 - 20 cm
 - 0.2 cm
- Focal length of a concave lens is 20 cm then radius of curvature —
 - 40 cm
 - 10 cm
 - 10 cm
 - 40 cm
- At 10 cm away from a spherical mirror, a 2 cm object is placed which makes an image at 20 cm far. What's the length of image?
 - 1 cm
 - 2 cm
 - 4 cm
 - 8 cm
- 

Which one is correct for PQ object? [Ctg.B.-17]

 - real, inverted & Reduced
 - real, inverted & magnified
 - virtual, straight & Reduced
 - virtual, straight & magnified
- In which place concave mirror will make virtual image?
 - focus plane
 - between focus and pole
 - between focus and curvature
 - between infinite to centre of curvature
- Which one is correct?
 - real image can be seen and projected.
 - real image is made if reflected ray meets naturally.
 - virtual image is inverted and made behind lens.
 - all mirror can make image
- Which one is correct if magnification is negative and greater than one?
 - mirror is convex and image virtual.
 - mirror is concave and image virtual.
 - mirror is concave and object is between focus and centre of curvature
 - mirror is concave and object is between focus and pole

- For a concave lens- $2f < u < \infty$ then, which of the following is correct?
 - $2f < v < \infty$
 - $v = 2f$
 - $f < v < 2f$
 - $0 < v < f$
- Rays that are parallel to each other and slightly inclined with principle axis, meets after reflecting on concave mirror —
 - Principal focus
 - secondary focus
 - conjugate focus
 - centre of curvature
- Which one shows graph for u-v for convex lens— [B.B.-15]
 - 
 - 
 - 
 - 
- Which one is $\frac{1}{u}$ vs $\frac{1}{v}$ graph for convex lens? [C.B. 16; D.B. 15]
 - 
 - 
 - 
 - 
- How is the image formed in compound microscope? [J.B. 15]
 - straight & reduced
 - straight & magnified
 - inverted & magnified
 - inverted & reduced
- If focal length of a convex lens used in simple microscope is 0.1m then, magnification— [S.B.-15]
 - 0.4
 - 1.4
 - 2.5
 - 3.5
- If magnification of objective and eyepiece of a compound microscope is m_1 & m_2 then total magnification— [S.B. -15]
 - $m_1 + m_2$
 - $m_1 \times m_2$
 - $m_1 + m_2$
 - $m_1 - m_2$
- How many image can be formed in microscope and telescope?
 - 1
 - 2
 - 3
 - 4
- Focal length of a magnifying glass is 0.20 m and magnification 2.60 then what is the minimum distance to see clear image? [B.B.-16]
 - 0.16
 - 0.32
 - 0.52
 - 0.64
- Magnification power for normal focusing of a telescope is 7. The distance between objective and eyepiece is 40 cm. What is the focal length of eyepiece? [B.B.-17]
 - 5 cm
 - 5.71 cm
 - 28 cm
 - 35 cm

22. Magnification for normal focusing on telescope—
 (a) $\frac{f_e}{f_o}$ (b) $\frac{f_o}{f_e} \left(1 + \frac{f_e}{D}\right)$
 (c) $\frac{f_o}{f_e}$ (d) $1 + \frac{D}{f_e}$ (c)
23. What type is radio telescope? [All Board-18]
 (a) absorbing (b) dispersing
 (c) reflecting (d) refracting (c)
24. What is the magnification power for astro-telescope?
 (a) $m = \frac{f_o}{f_e} \left(1 + \frac{f_e}{D}\right)$ (b) $m = \frac{f_e}{f_o} \left(1 + \frac{f_e}{D}\right)$
 (c) $m = \frac{f_o}{f_e}$ (d) $m = \frac{f_e}{f_o}$ (c)
25. Focal length of objective and eyepiece are 35 cm and 5 cm, then what will be the maximum length of instrument?
 (a) 25 cm (b) 35 cm
 (c) 30 cm (d) 40 cm (d)
26. Refractive index of an equilateral triangle is $\sqrt{2}$, what is the minimum angle of deviation?
 (a) 15° (b) 30°
 (c) 45° (d) 60° (b)
27. For a prism, $A = 60^\circ$ and $\delta_m = 30^\circ$ then $\mu = ?$ [R.B.-15]
 (a) 1.141 (b) 1.414
 (c) 1.5 (d) 1.66 (b)
28. Which is correct for minimum deviation? [S.B.-15]
 (a) $i_1 = r_1$ (b) $r_1 = i_2$
 (c) $r_1 = r_2$ (d) $i_1 = i_2 = \frac{A}{2}$ (c)
29. Refractive angle of a prism is 58° , minimum angle of deviation 38° . What will be the refractive index?
 (a) 1.53 (b) 1.33
 (c) 1.23 (d) 1.13 (a)
30. Which one is correct for slim prism? [R.B.-16]
 (a) $\delta = i_1 + i_2 - A$ (b) $\delta = A(\mu - 1)$
 (c) $\delta = \mu(A - 1)$ (d) $\delta = A(1 - \mu)$ (b)
31. Minimum angle of deviation for an equilateral prism is 40° . What will be the incident angle for minimum angle of deviation?
 (a) 30° (b) 40°
 (c) 50° (d) 60° (c)
32. What will be the graph of $i - \delta$ for a prism? [R.B.-15]
 (a)  (b) 
 (c)  (d)  (d)
33. Which colour's angle of deviation is called mean angle of deviation? [S.B.-17]
 (a) red (b) blue
 (c) green (d) yellow (d)
34. For which colour angle of deviation is least?
 (a) red (b) blue
 (c) violet (d) green (a)
35. For which colour angle of deviation is most? [Ctg.B.-16]
 (a) yellow (b) red
 (c) violet (d) orange (c)
36. Reason for different colour in light—
 (a) Difference in wavelength
 (b) intensity
 (c) different source
 (d) difference in amplitude (a)
37. Which colour is the median ray? [C.B.-16]
 (a) yellow (b) blue
 (c) green (d) orange (a)
38. Prism made of crown glass shows angle of deviation for violet, yellow & red colours in 3.72° , 3.28° & 2.84° . So, what is the dispersion power of the prism?
 (a) 0.0268 (b) 0.268
 (c) 0.368 (d) 0.468 (b)
39. Which is not present in the dispersion of light? [D.B.-16]
 (a) red (b) orange
 (c) violet (d) black (c)
40. For minimum deviation i — [D.B.-17]
 i. $i_1 = i_2$ ii. $A = 60^\circ$
 iii. $r_1 = r_2$
 Which of the following is correct?
 (a) i & ii (b) ii & iii
 (c) i & iii (d) i, ii & iii (c)
41. If 2D & 3D power of lenses are combined, then— [R.B.-17]
 i. Equivalent Power of lens 5D
 ii. Equivalent focal length of lens 0.2m
 iii. magnification power of 2nd lens 1.75
 Which of the following is correct?
 (a) i & ii (b) i & iii
 (c) ii & iii (d) i, ii & iii (a)
42. According to positive sign convention—
 i. concave mirrors have positive focal length
 ii. convex mirrors have negative focal length
 iii. The way light travels after refraction, radius of curvature is negative in that direction
 Which of the following is correct?
 (a) i & ii (b) i & iii
 (c) ii & iii (d) i, ii & iii (a)
43. What can be done to increase magnification in compound microscopes?
 i. By decreasing focal length of eyepiece
 ii. Decreasing distance of object
 iii. increasing distance of image made by objective
 Which of the following is correct?
 (a) i & ii (b) i & iii
 (c) ii & iii (d) i, ii & iii (d)
44. For astro-telescope, length of tube is— [D.B.-15]
 i. $b = f_o + f_e$ ii. $b = f_o + u_e$
 iii. $b = v_o + u_e$
 Which of the following is correct?
 (a) i & ii (b) ii & iii
 (c) i & iii (d) i, ii & iii (d)
45. In minimum deviation position for prism — [S.B.-15]
 i. $\delta_m = 2i_1 - A$ ii. $r_1 = r_2$
 iii. $i_1 = i_2$
 Which of the following is correct?
 (a) i & ii (b) ii & iii
 (c) i & iii (d) i, ii & iii (d)

46. In astro-telescope —
 i. Focal length of objective & aperture is large
 ii. Focal length of eyepiece & aperture are smaller
 iii. distance between objective and eyepiece are specific

Which of the following is correct?

- (a) i & ii (b) i & iii
 (c) ii & iii (d) i, ii & iii

47. Images in convex lens are always —
 i. straight ii. Reduced
 iii. Between pole and focus.

Which of the following is correct?

- (a) i & ii (b) i & iii
 (c) ii & iii (d) i, ii & iii

48. Fermat's principle can show—

- i. Linear motion of light
 ii. Light's reflection
 iii. interference of light

Which of the following is correct?

- (a) i & ii (b) i & iii
 (c) ii & iii (d) i, ii & iii

49. Refractive index of prism depends on— [J.B.-16]

- i. colour of light
 ii. Prism angle
 iii. wavelength of light

Which of the following is correct?

- (a) i & ii (b) ii & iii
 (c) i & iii (d) i, ii & iii

50. Refractive index of light on a medium depends on— [S.B.-16]

- i. colour ii. Wavelength
 iii. frequency

Which of the following is correct?

- (a) i & ii (b) i & iii
 (c) ii & iii (d) i, ii & iii

51. If refractive index is $\mu > 1$ then— [All Board-18]

- i. light will travel from lighter to dense medium
 ii. light will travel from denser medium to lighter medium
 iii. Incident angle will be larger than refracting angle

Which of the following is correct?

- (a) i & ii (b) i & iii
 (c) ii & iii (d) i, ii & iii

52. If speed of light in medium a is greater than b, then—

- i. $n_a > n_b$
 ii. b medium is less dense than a medium
 iii. If light travels from a to b then refracting angle will be smaller than incident angle

Which of the following is correct?

- (a) i & ii (b) i & iii
 (c) ii & iii (d) i, ii & iii

53. An 6cm object is placed 12cm far from a convex lens of 16 cm focal length. Here— [Ctg. B.-16]

- i. image and object will be on same side
 ii. image will be 24cm

- iii. image is real & inverted

Which of the following is correct?

- (a) i & ii (b) i & iii
 (c) ii & iii (d) i, ii & iii

Read the following stem and answer 54 & 55:

In minimum deviation of a prism incident angle is 40° . Prism angle 50° . [S.B.-17]

54. Refracting angle in 1st surface—

- (a) 20° (b) 25°
 (c) 30° (d) 40°

55. Incident angle in 2nd surface—

- (a) 10° (b) 15°
 (c) 20° (d) 25°

Read the following stem and answer 56 & 57:

The focal length of objective and eyepiece is 4×10^{-3} m and 5×10^{-2} m. Image made by objective is real image and 22×10^{-2} m away. Distance from the eyepiece to virtual image is 25×10^{-2} m.

56. Total magnification of the instrument?

- (a) 54 (b) 324
 (c) 108 (d) 378

57. For objective—

- i. distance of object 4×10^{-3} m
 ii. distance of image 25×10^{-2} m
 iii. magnification 54

Which of the following is correct?

- (a) i & ii (b) i & iii
 (c) ii & iii (d) i, ii & iii

Read the following stem and answer 58 & 59:

A magnifying glass has focal length of 12.5 cm. An astrologer took it to read the palm of hands in clearer image at nearest distance for clear view. [R.B.-15]

58. What is the magnification?

- (a) 0.5 (b) 1.5
 (c) 2 (d) 3

59. To get 2.5 times magnified image how far the lens should be moved?

- (a) 2.5 cm (b) 6.25 cm
 (c) 16.66 cm (d) 20 cm

Read the following stem and answer 60 & 61:

Shilea placed an object before a convex lens of 9 cm focus length and got 3 times magnified virtual image. Later on, she replaced the lens with a convex lens half focal length of previous lens. [J.B.-16]

60. Distance between lens and object?

- (a) 6 cm (b) 8 cm
 (c) 10 cm (d) 12 cm

61. What kind of image will she see after replacing the lens?

- (a) magnification is same, real image
 (b) magnification increased, real image
 (c) magnification Reduced, virtual image
 (d) magnification is same, virtual image

Read the following stem and answer:

A ray of light enters water from vacuum. Given, speed of light at vacuum is $3 \times 10^8 \text{ m}\cdot\text{s}^{-1}$ & Refraction index of water 1.33. [C.B.-15]

62. What is the speed of light in water?

- (a) $2 \times 10^8 \text{ m}\cdot\text{s}^{-1}$ (b) $2.26 \times 10^8 \text{ m}\cdot\text{s}^{-1}$
(c) $2.3 \times 10^8 \text{ m}\cdot\text{s}^{-1}$ (d) $3 \times 10^8 \text{ m}\cdot\text{s}^{-1}$

(b)

63. For above stem—

- i. wavelength decreases
ii. Frequency remains same
iii. wave velocity is unchanged

Which of the following is correct?

- (a) i & ii (b) ii & iii
(c) i & iii (d) i, ii & iii

(a)

Read the following stem and 64 & 65:

Radius of curvature of a concave mirror is 24 cm. An object was placed 36 cm away from the mirror.

64. Position of image is —

- (a) 12 cm in front (b) 18 cm in front
(c) 24 cm behind (d) 36 cm in front

(b)

65. Type of image —

- (a) real & Reduced (b) virtual & Reduced
(c) real & magnified (d) virtual & magnified

(a)

Prism angle 60° and Refractive index $\sqrt{2}$, Answer 66 & 67 based on above stem:

66. Minimum Angle of deviation-

- (a) 30° (b) 38°
(c) 32.19° (d) 40°

(a)

67. If incident angle is 60° then angle of deviation will be?

- (a) 30° (b) 38°
(c) 32.36° (d) 40°

(c)

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