



PHYSICS

BOOKS - AGRAWAL EXAM CART BIHAR

REFLECTION OF LIGHT, MULTIPLE REFLECTION AND HUMAN EYE AND ITS CARE

Examples

1. A light ray strikes a reflective plane surface at an angle of 30° with the plane surface.

(i) Find the angle of incidence. (ii) Find the angle of reflection. (iii) Find the angle of between the incident and the reflected ray. (iv) Find the angle between the reflected ray and the plane surface.



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2. The radius of curvature of a spherical mirror is 20 cm. What is its focal length?



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3. Speed of light in air is $3 \times 10^8 \text{ m s}^{-1}$ and the speed of light in a medium is $2 \times 10^8 \text{ m s}^{-1}$. Find the refractive index of the medium with respect to air.



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4. Refractive index of water is $\frac{4}{3}$ and the refractive index of glass is $\frac{3}{2}$. find the refractive index of glass with respect to the refractive index of water.



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Jnv Previous Year 2007 2020 Questions

1. If the object is 5 cm away from the plane mirror, the image formed by it and the object will be cm apart.

A. 2.5

B. 5

C. 10

D. 15

Answer: C



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2. How many times is a ray of light reflected by two plane mirrors placed parallel and facing each other?

A. 2

B. 4

C. 8

D. infinite

Answer: D



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3. Which of the following is/are not always necessary to observe a shadow?

A. Sun

B. Screen

C. Source of light

D. Opaque object

Answer: A



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4. The objects which partially allow light to pass through it are called :

A. transparent

B. luminous

C. opaque

D. translucent

Answer: D



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5. Which of the following can never form a circular shadow

A. A ball

B. A flat disc

C. A shoe box

D. An ice-cream cone

Answer: C



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6. Bouncing back of ray of light from shining surface on which it was incident is known as

A. refraction

B. bending

C. reflection

D. dispersion

Answer: C



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7. In which medium the speed of the sound is maximum?

A. Vacuum

B. Water

C. Glass

D. None of these

Answer: A



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8. The blue colour of sky is due to :

A. Dispersion of light

B. Scattering of light

C. Interference of light

D. Refraction of light

Answer: B



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9. Which lens is used to rectify myopia ?

A. Convex

B. Concave

C. Plain

D. Cylindrical

Answer: B



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10. Which of the following has maximum energy?

A. Blue light

B. Green light

C. Red light

D. Yellow light

Answer: A



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11. Due to which the air bubble seems to be sparkling in the water ?

A. Due to reflection

B. Due to total reflection

C. Due to diffraction

D. Due to refraction

Answer: A



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12. A person effected by colour blindners feels problem to identify which two colours ?

A. Black & Blue

B. Green & Violet

C. White and Yellow

D. Green & Red

Answer: D



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13. Choose the correct statement for making the images by plain mirror:

- (i) Image Distance=Object Distance (ii) Image Size=Object Size (iii) Laterally Converted=Erected Image (iv) Real Image

A. (i), (ii) and (iii)

B. (ii), (iii) and (iv)

C. (i), (ii) and (iv)

D. (i), (iii) and (iv)

Answer: A



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14. The human eye forms the image of an object at its

A. Cornea

B. Iris

C. Retina

D. Pupil

Answer: C



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15. From the following which can convert an incident light from a point source into parallel beam?

- A. Concave mirror and concave lens both
- B. Concave mirror and convex lens both
- C. Convex mirror and convex lens both
- D. Perpendicularly placed two plane mirrors

Answer: B



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16. Which mirror is used as a back mirror in motor vehicles ?

A. Plain

B. Circular

C. Concave

D. Convex

Answer: D



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17. Which part of the donor's eye is transplanted in eye donation ?

A. Lens

B. Cornea

C. Whole Eye

D. Retina

Answer: B



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18. In which of the following medium the speed of light is maximum ?

A. Water

B. Glass

C. Diamond

D. Vacuum

Answer: D



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19. The vision range for a normal human eye is:

A. 25 cm to infinity

B. 25 cm from zero

C. 60 cm from infinite

D. 50 cm from infinite

Answer: A



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20. The stars twinkle in the sky because of:

A. Reflection of light

B. Scattering of light

C. Refraction of light

D. Total reflection of light

Answer: C



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21. By which reason the colour of sky seems blue?

A. due to deflection

B. due to reflection

C. due to refraction

D. due to scattering

Answer: D



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22. The speed of light in vacuum is equal to

A. $3 \times 10^7 m / s$

B. $2 \times 10^8 m / s$

C. $3 \times 10^8 m / s$

D. $3 \times 10^{10} m / s$

Answer: C



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23. To find the focal length of a convex lens, an image of a far located tree is obtained on a screen. For this the distance measured is:

- A. Only of between screen and tree
- B. Only of between lens and screen

C. Only of between lens and tree

D. Between screen and tree and lens &
screen

Answer: C



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24. What the splitting of light into colours by a prism is called ?

A. Reflection

B. Refraction

C. Deflection

D. Dispersion

Answer: D



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25. If the angle between mirror and incident ray is 60° , then what is the value of reflective angle?

A. 0°

B. 60°

C. 30°

D. 90°

Answer: B



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26. Focal length of a lens is 20 cm. Its power

A. +5D

B. - 5D

C. + 5 cm

D. 0.20 m

Answer: A



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27. In a plain mirror the angle between the incident ray and reflected ray is 60° . The angle between incident ray and mirror is?

A. 60°

B. 30°

C. 90°

D. 120°

Answer: A



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28. Consider the statements given below

(1) Image made by compound microscope is

virtual and inverted (2) The last image made by astronomic telescope is virtual and inverted

- A. (1) & (2) both are wrong
- B. (1) & (2) both are correct
- C. (1) is correct, while (2) is wrong
- D. (2) is correct, while (1) is wrong

Answer: B



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29. From some following light image type which narrates the image made on retina of eye?

- A. Real and bigger than object
- B. Virtual and smaller than object
- C. Virtual and of same size of object
- D. Real and inverted

Answer: D



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30. The power of a lens is 4 diopter. It is

A. Concave lens of 25 m focal length

B. Convex lens of 35 m focal length

C. Concave lens of 1 m focal length

D. Concave lens of 2 m focal length

Answer: A



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1. We are able to see through a.... medium as light is transmitted through it.

A. Opaque

B. Transparent

C. Translucent

D. Rough

Answer: B



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2. Due to which property of light sharp shadows of opaque objects are obtained?

A. Light travels in straight line

B. Light travels in zig-zag

C. Light travels in vacuum

D. None of the above

Answer: A



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3. Which metal is the best reflector of light?

A. Magnesium

B. Zinc

C. Copper

D. Silver

Answer: D



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4. When all the colours of white light are reflected back from an object, then object will appear:

A. blue

B. green

C. black

D. white

Answer: D



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5. The black board seems black because:

A. it reflects every colour

B. it does not reflect any colour

C. it absorbs black colour

D. it reflects black colour

Answer: B



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6. In which of the following media, the velocity of light is maximum?

A. Water

B. Glass

C. Diamond

D. Vacuum

Answer: D



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7. The stars are visible because :

- A. they are emitting their own light
- B. they are reflecting the light of sun
- C. they are away from earth
- D. they are absorbing the light of sun

Answer: A



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8. Number of image formed of an object placed between the two inclined plane mirror at an angle of 90° , is:

A. 2

B. 3

C. 4

D. 5

Answer: B



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9. A virtual image, larger than the object can be produced by:

A. plane mirror

B. concave lens

C. convex mirror

D. concave mirror

Answer: D



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10. When an object moves towards a convex lens, the size of the image

A. decreases

B. first decreases then increases

C. increases

D. remain the same

Answer: B



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11. When light is passed through a prism when.....colour shows maximum deviation.

A. Red colour

B. Violet colour

C. Blue colour

D. Green colour

Answer: B



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12. When light travels from hot air to cold air, then:

A. bends towards the normal

B. bends away from the normal

C. bends towards the normal and scatter

D. bends away from the normal and scatter

Answer: A



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13. The focal length of convex lens used as a magnifying glass is:

A. more

B. much more

C. less

D. All of these

Answer: C



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14. Which one of the following materials cannot be used to make a lens ?

A. Water

B. Glass

C. Plastic

D. Clay

Answer: D



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15. In which of the following conditions the ray will not be deviated on passing through the lens ?

A. The ray passes through optical centre

B. The ray passes through $2F$

C. The ray passes through first focus

D. The ray passes parallel to principal axis

Answer: A



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16. The human eye forms the image of an object at its

A. retina

B. pupil

C. cornea

D. iris

Answer: A



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17. The eye lens is a

A. transparent double-concave lens

B. transparent double-convex lens

C. transparent concavo-convex lens

D. none of these

Answer: B



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18. After looking sun the colour of other things appears:

A. black

B. white

C. yellow

D. red

Answer: A



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19. Human eyes are always paired. What will happen if humans would have only one eye?

A. the world would become two dimensional for humans

B. Humans will not be able to see objects beyond 90°

C. All the objects will appear faint

D. All of the above

Answer: A



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20. The human eye is like a camera and hence it contains a system of lens. The eye lens forms

- A. Real, erect, same, size
- B. Real, inverted, diminished
- C. Virtual, erect, diminished
- D. Virtual, inverted, magnified

Answer: B



21. A student is asked to sit at the last bench because he cannot read the letters written on blackboard clearly from front seat but still is unable to read the letters written in his textbook. Which of the following statements is correct?

- A. The near point has come closer to him
- B. The far point has come closer to him
- C. The near point has receded away

D. The far point has receded away

Answer: C



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22. What is the function of iris in human eye?

- A. To control or regulate the amount of coming light to the eye
- B. To return the coming light to the eye
- C. to send the photo to the image lens

D. None of the above

Answer: A



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23. If the image formed by a convex lens is of the same size as that of the object, what is the position of the image with respect to the lens?

A. less than the image distance

B. equal to the image distance

C. less than the focal length of the lens

D. equal to the focal length of the lens

Answer: B



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24. Which of the following instruments does not contain lenses?

A. Microscope

B. Camera

C. Binoculars

D. Periscope

Answer: D



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25. A boy walks at a speed of 5 m/s towards a plane mirror. The boy and his image in the mirror are moving:

A. towards each other at a speed of 5 m/s

B. away from each other at a speed of 5

m/s

C. towards each other at a speed of 10 m/s

D. away from each other at a speed of 10

m/s

Answer: C



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26. What are the factors in which the image obtained by the pinhole camera depend ?

- A. placing the object nearer to the camera
- B. reducing the size of the object
- C. decreasing the distance between the pinhole and the screen
- D. making the pinhole bigger

Answer: A



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27. The image formed by a slide projector is usually:

A. real, inverted and diminished

B. real, inverted and magnified

C. virtual, upright and magnified

D. virtual, inverted and diminished

Answer: B



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28. White light is dispersed using a prism by means of:

A. reflection

B. refraction

C. diffraction

D. interference

Answer: B



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29. Parallel rays of light entering a convex lens always converge at:

A. centre of curvature

B. the principal focus

C. optical centre

D. the focal plane

Answer: B



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30. Total internal reflection can take place in glass and not in air because glass is:

- A. optically denser than air
- B. less transparent than air
- C. more transparent than air
- D. as optically dense as air

Answer: A



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31. Red light cannot be dispersed by a glass prism because it :

A. has a high frequency

B. has a long wavelength

C. does not have component colors

D. is not refracted in glass

Answer: C



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32. The bending of a beam of light when it passes obliquely from one medium to another is known as:

A. reflection

B. refraction

C. dispersion

D. deviation

Answer: B



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33. Name the part of a lens through which a ray of light passes without suffering any deviation.

A. optical centre

B. focus

C. centre of curvature

D. pole

Answer: A



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34. In a simple microscope lens used is:

A. biconvex

B. biconcave

C. plano convex

D. cylindrical

Answer: A



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35. A positive magnification greater than unity indicates:

A. real image

B. virtual image

C. neither real nor virtual image

D. distorted image

Answer: B



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36. An object is placed 12 cm from a convex lens whose focal length is 10cm. The image must be:

- A. virtual and enlarged
- B. virtual and reduced in size
- C. real and reduced in size
- D. real and enlarged

Answer: D



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37. The image produced by a concave lens is:

A. always virtual and enlarged

B. always virtual and reduced in size

C. always real

D. sometimes real, sometimes virtual

Answer: B



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38. A virtual image is formed by:

A. a slide projector in a cinema hall

B. the ordinary camera

C. a simple microscope

D. telescope

Answer: C



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39. Where should an object be placed in order of to use a convex lens as a magnifying glass?

- A. less than one focal length
- B. more than one focal length
- C. less than twice the focal length
- D. more than twice the focal length

Answer: A



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40. Image formed by a convex mirror is

- A. virtual, erect and diminished

B. virtual real and magnified

C. real, inverted and diminished

D. real, erect and magnified

Answer: A



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41. Image formed by plane mirror is :

A. real and erect

B. virtual and erect

C. real and inverted

D. virtual and inverted

Answer: B



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42. The geometrical centre of surface of spherical mirror is called its _____

A. centre of curvature

B. focus

C. pole

D. vertex

Answer: A



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43. Define the principal focus of a concave mirror.

A. real

B. Virtual

C. undefined

D. at the pole

Answer: B



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44. The splitting of light into its component colors is called :

A. refraction

B. spectrum

C. dispersion

D. diffraction

Answer: C



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45. Radius of curvature of a concave mirror is always to the mirror.

A. parallel

B. perpendicular

C. inclined at 60°

D. inclined at 45°

Answer: B



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46. The mirror used by dentists to concentrate light on the tooth to be examined is a _____ mirror.

A. concave mirror

B. convex mirror

C. plane mirror

D. cylindrical mirror

Answer: A



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47. An object is placed 1.5m from a plane mirror. How far is the image from the object?

A. 3m

B. 1.5m

C. 2m

D. 1m

Answer: A



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48. A drop of water appears like pear due to:

A. refraction

B. reflection

C. total internal reflection

D. none of these

Answer: C



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49. The radius of curvature of a plane mirror

A. infinity

B. zero

C. equal to C

D. none of these

Answer: A



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50. Which one among the following is used to make periscope?

A. Concave mirror

B. Convex mirror

C. Plane mirror

D. Lens

Answer: C



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51. Which mirror has a wider field of view ?

A. Convex mirror

B. Concave mirror

C. plane mirror

D. cylindrical mirror

Answer: A



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52. Explain why, a ray of light passing through the centre of curvature of a convex mirror gets reflected back along the same path.

- A. pass through the focus
- B. pass through the centre of curvature
- C. pass through the pole
- D. retrace its path

Answer: D



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53. Arranging in the ascending order of wave length, which one is true?

- A. Blue, Green, Red
- B. Orange, Green, Red
- C. Blue, Yellow, Green
- D. Orange, Yellow, Green

Answer: A



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54. In a transparent medium, the velocity.....
light is the least.

A. red

B. green

C. yellow

D. violet

Answer: D



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55. Pigments are mixed according to method.

- A. additive
- B. subtractive
- C. multiplicative
- D. fractional

Answer: B



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56. A change in the focal length of the eye lens is brought by.

- A. Retina
- B. Vitreous humour
- C. Cornea
- D. Ciliary muscles

Answer: D



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57. In the spectrum of visible light which colour of light deviates the maximum?

A. Red

B. Yellow

C. Violet

D. Blue

Answer: A



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58. light is deviated the maximum in the spectrum of white light obtained with a glass prism.

A. Violet

B. Red

C. Green

D. Orange

Answer: A



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59. What are that number of primary colours ?

A. red, blue, yellow

B. red, orange, yellow

C. red, blue, green

D. red, green, cyan

Answer: C



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60. What are that number of primary colours ?

A. yellow, green, magenta

B. magenta, yellow, cyan

C. blue, green, yellow

D. blue, green, violet

Answer: B



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61. Hypermetropia is caused by :

- A. low converging power of eye lens
- B. low diverging power of eye lens
- C. high converging power of eye lens
- D. retinal displacement

Answer: D



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62. Myopia can be corrected using:

A. concave lens

B. convex lens

C. cylindrical lens

D. plane convex lens

Answer: A



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63. Twinkling of stars is due to atmospheric

A. reflection

B. dispersion

C. scattering

D. atmospheric refraction

Answer: D



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64. When a ray goes from an optically rarer medium to a denser medium, it:

- A. goes straight
- B. bends away from normal
- C. bends towards normal
- D. reflect back

Answer: C



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65. Magnification produced by a plane mirror

is:

A. -1

B. 0

C. $+1$

D. ∞

Answer: C



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66. Focal length of a plane mirror is

A. zero

B. infinity

C. double of its aperture

D. half of its aperture

Answer: A



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67. When a ray of light is incident normally on a surface, then

A. 90°

B. 0

C. 45°

D. none of these

Answer: B



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68. In activity 1, why does the portion of the pencil inside the water appears to be thicker and broken near the surface of water?

- A. reflection of light
- B. refraction of light
- C. total internal reflection
- D. none of these

Answer: B



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69. For point of normal human eye is:

A. 25cm

B. 25m

C. 500m

D. infinity

Answer: D



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70. The amount of light entering the eye is controlled by the

A. retina

B. Cornea

C. pupil

D. crystalline lens

Answer: C



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