PHYSICS

BOOKS - PEARSON IIT JEE FOUNDATION

LIGHT

Exemple

1. A candle of height 6 cm is placed at 2cm distance from the pinhole camera. If the width of the camera is 4 cm, find the magnification and size of the image.

A. 14 cm

B. 12 cm

C. 10 cm

D. 9 cm

Answer: B

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2. What happens to a light ray that is incident on a plane mirror normally?

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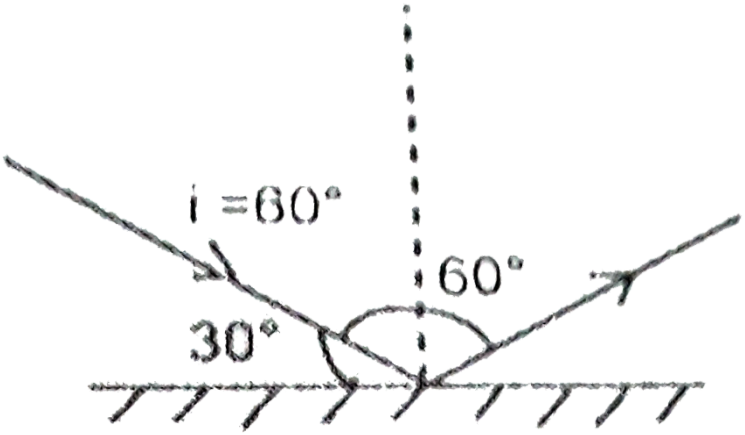
3. If a light ray incident on a plane mirror makes an angle 30° with it, find the angle of incidence and angle of reflection.



A. 90 degree

B. 45 degree

C. 30 degree

D. 60 degree

Answer: D

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4. A concave mirror has radius of curvature of 30 cm. Find its focal length

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Very Short Answer Type Questions

1. Glow worm is

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2. The garvitational force exerted by the sun on the Moon is greater than that exerted by the Earth on the Moon. Why then does not the Moon escape from the Earth, during solar esclipe?

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3. Which phenomenon/phenomena of light is / are involved in the formation of a rainbow ?

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4. Periscope works on the pirnciple of _____ of light.

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5. A plane mirror forms _____ image.

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6. Real image is formed by a _____ mirror.

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7. When we see an object the image formed on the retina is

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8. 1 watt = _____ lumen.

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9. If an object is placed unsymmetrically between two plane mirrors, inclined at the angle of 60°, then the total number of images formed is

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10. Which of the following is opaque?

A. Water

B. Glass

C. Mirror

D. Prism

Answer: C

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11. When the Earth comes into the umbra and penumbra of the Moon, _____ is formed.

A. lunar ecilpse

B. solar eclipse

C. partial lunar eclipse

D. None of the above.

Answer: B

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12. If a ray of light incident on a plane mirror is such that it makes an angle of 30° with the mirror, then the angle made by the reflected ray with the mirror is

A. 35°

B. 60°

C. 90°

D. 30°

Answer: D

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13. The direction of light can be changed by _____

A. a plane mirror

B. a piece of paper

C. a stone

D. All the above.

Answer: D

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14. The size of an image formed by a plane mirror is _____.

A. larger than the size of the object.

B. smaller than the size of the object.

C. equal to the size of the object.

D. Cannot be determined.

Answer: C

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15. Image of an object in a convex mirror is

A. erect

B. virtual

C. inverted

D. Both (a) and (b)

Answer: D

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16. A diminished virtual image can be formed only in

A. plane mirror

B. concave mirror

C. convex mirror

D. All the above.

Answer: B

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17. When a ray of light passes through glass slab, refraction of light occurs___

A. the deviation of red light is maximum.

B. the deviation of violet light is maximum.

C. the deviation of blue light is maximum.

D. all rays deviate equally.

Answer: B

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18. Image formed by a convex mirror is

A. virtual

B. erect

C. smaller in size than the object

D. All the above.

Answer: D

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19. The modern unit of intensity of light is _____.

A. lumen

B. candle power

C. lux

D. All the above.

Answer:

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20. Read the following statements and choose the correct option.

(A) Planets are not luminous bodies.

(B) The sun is the nearest star to us from which the earth receives most of the light.

A. Only A is true

B. Only B is true

C. Both A and B are true

D. Both A and B are false

Answer: C

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21. Which of the following is (are) natural source(s) of light?

A. Planets

B. Glow worm

C. Stars

D. Both (b) and (c)

Answer: D

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22. Read the following statements and choose the correct option.

(A) Onlly a point source forms a complete umbra.

(B) An extended source forms a complete umbra and penumbra.

A. Only A is true

B. Only B is true

C. Both A and B are true

D. Both A and B are false

Answer: C

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23. The line joining the pole and the centre of curvature of a mirror is called the

A. the principal axis

B. y-axis

C. the centre axis

D. None of these

Answer: A

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24. Which of the following is (are) converging mirror (s)?

A. Convex mirror

B. Concave mirror

C. Plane mirror

D. Both (a) and (b)

Answer: B

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25. The image distance in case of a convex mirror can be

A. greater than focal length

B. less than focal length

C. equal to focal length

D. Both (b) and (c)

Answer: D

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26. What are the laws of reflection ?

A. the angle of incidence (i) = the angle of reflection (r).

B. the incident ray, the reflected ray and the normal lie in the same plane.

C. the incident ray and the reflected ray lie on either side of the normal.

D. All the above.

Answer: B

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27. One lumen = _____ candle power.

A. 10.76

B. 12.56

C. 700

D. None of these

Answer: B

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28. An object is placed in front of a mirror. Arrange the following steps in sequential order to determine the nature of the mirror.

(A) Check whether the image formed is virtual or real.

(B) Check whether the virtual image formed is dimished, magnified or same size as that of the object.

(C) If the image formed is real, the mirror used is concave.

(D) If a magnified vritual image is formed, the mirror is concave, if a dimished virtual image is formed, the morror is convex and if size of the image is equal to the size of the object, plane mirror is used.

A. ACBD

B. BDCA

C. ACDB

D. BADC

Answer: A

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29. Write the following steps in sequential order to verify the laws of reflection.

(A) Draw a normal at the point where the two lines PQ and P_1Q_1 meet.

(B) Remove the pins and the mirror and join P,Q similarly join P_1, Q_1.

(C) View the image of P and Q and fix two more pins P_1 and Q_1 such that the images of pins P,Q and P_1, Q_1 are along the same line.

(D) Draw a straight line on a white paper spred on the table and fix a plane mirror on the line.

(E) Fix two pins P and Q in front of mirror.

(F) Measure the angle of incidence and angle of reflection and copare them to verify the law reflection.

A. DABECF

B. ACDBFE

C. DECBAF

D. DBACEF

Answer: C

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30. Match the entries given in Column A with the appropriate ones in Column B.

Column A	Column B
A. A plane mirror	( )a. Luminous source
B. Virtual image	( )b. Can be caught on a screen.
C. Reflection of light	( )c. Magnified
D. The Sun	( )d. Read
E. Real image	( )e. Vacuum
F. Prism	( )f. Image distance is equal to object
G. Image on the retina	( )g. Dispersion
H. Velocity of light is maximum	( )h. Persicope

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31. Match the entries given in Column A with the appropriate ones in Column B.

Column A	Column B
A. Air	( )a. Bioluminescence
B. Pure water	( )b. Opaque medium
C. Wood	( )c. Homogeneous
D. Glow warm	( )d. Heterogeneous medium

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32. Match the entries given in Column A with the appropriate ones in Column B.

Column A	Column B
A. Intensity of light	( )a. Plane mirror
B. Rainbow	( )b. Shadow
C. Looking glass	( )c. Hot source
D. Eclipse	( )d. Lumen
E. Filament bulb	( )e. Dispersion

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33. Distinguish between luminous and non-luminous bodies.

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34. Define an optical medium.

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35. List out the difference between a point source and an extended source of light.

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36. What is rectilinear propagation of light?

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37. What is a lunar eclipse?

Watch Video Solution

38. What is reflection?

Watch Video Solution

39. What is a real image?

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40. Write the mathematical expression to calculate the number of image formed by two plne mirrors placed symmetrically at an angle $'\theta'$.

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41. Define centre of curvature.

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42. How many colours does white light consist of and what are they?

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43. What are hot and cold sources of light?

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44. Define umbra and penumbra.

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45. At the time of total solar eclipse, the spectrum of solar radiation would be

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46. DIFFUSED REFLECTION

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47. VIRTUAL IMAGE

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48. Name two types of spheircal mirrors, Define pole, centre of curvature and angular aperture of the mirror.

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49. Define principal focus.

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50. Write the relationship between focal length and radius of curvature.

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51. What happens to white light when it passes through a prism?

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52. What is the SI unit of luminous intensity?

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Short Answer Type Questions

1. Define transparent, translucent and opaque optical media with examples.

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2. Pinhole camera

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3. (a) What are the characteristics of an image formed by a plane mirror?

(b) Write few uses of plane mirror.

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4. Describle Newton's disc.

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5. What are the three rays we consider to draw ray diagrams in order to show the formation of images by spherical mirrors? How do they propagate after reflection?

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6. Explain how an opaque paper can be made translucent.

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7. Describe ray of light, beam of light, parellel beam of light.

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8. (a) Sate laws of reflection.

(b) Draw a ray diagram to represent formation of an image of a point source by a plane mirror.

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9. Why is the light from the moon called cool light and the light from the sum called hot light?

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10. Why do we see lighting before we hear the thunder ?

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11. (i) Distinguish between concave and convex mirrors.

(ii) Write few uses of spherical mirror.

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12. What are cold and hot sources of light? Give examples for each.

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13. Growth in plants is

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Long Answer Type Questions

1. Write two phenmoena which can be understood by rectilinear propagtion of light.

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2. How can laws of reflection be experimentally verified?

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3. Draw the ray diagrams to represent the formation of image when object is at infinity and any distance between infinity and pole of a convex mirror.

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4. Describe few sources of light briefiy.

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5. Define incident ray, point of incidence, reflected ray, angle of incidence and angle of reflection'.

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6. Describe the working of a periscope

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7. Explain the formation of images by a concave mirror with the help of a ray diagram.

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Level 1

1. Moon is a luminous object.

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2. Eclipses are formed due to recitinear propagation of light.

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3. The path of light is straight line.

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4. Sun light is not necessary for the growth of plants.

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5. A virtual image can be obtained on a screen.

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6. The rare-view mirror used in vehicles is a convex mirror.

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7. Rainbow is observed when the sun is

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8. The sky appears blue due to scattering of light.

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9. Oli paper is an example of _____ medium of light.

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10. An electric bulb converst _____ energy to ____ energy.

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11. Real image is formed by a _____ mirror.

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12. Can virtual image be formed on the retina in a seeing process?

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13. ____ helps to convert light energy into chcmical energy.

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14. When the Moon is not completely visible from the Earth, we call it ____ eclipse.

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15. A concave mirror is formed from a sphere of radius 20 cm. The image of an object at an infinite distance is formed at a distance of _____ cm from the mirror.

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16. _____ mirror is used as shaving mirror.

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17. If the angle of incidence on a plane mirror is 30°, then angle between the reflected ray and the plane mirror is _____

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18. When an object is held between pole and focus of a concave mirror, the image formed is.

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19. The path of light entering into the eye .

A. intensity

B. colour of light

C. speed

D. None of these

Answer: A

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20. The image of an object placed in front of a concave mirror found to coincide with object itself. The position of the object is _____.

A. at C

B. between C and F

C. between F and pole

D. at F

Answer: A

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21. The image of an object is formed at infinite distance from a concave mirror. The position of the object is _____.

A. at C

B. between C and F

C. at F

D. between pole and F

Answer: C

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22. One wants to see a magnified image of an object in a mirror. What type of mirror should one use ?

A. concave

B. plane

C. convex

D. centre of curvature

Answer: A

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23. Geometric centere of a mirror is called _____ mirror.

A. pole

B. principle focus

C. optic centre

D. centre of curvature

Answer: A

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

A. passes through the principal focus

B. retraces its path

C. passes along the principal focus

D. None of these

Answer: B

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25. The phenomenon of light which is responsible for vision is _____.

A. refration

B. irregular reflection

C. dispersion

D. Both (b) and (c)

Answer: B

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26. Which of the following is (are) true in the case of a plane mirror?

A. Objcet distance = image distance.

B. Object size = image size.

C. The image formed is virtual.

D. All the above.

Answer: D

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27. When an object is placed between two parallel mirrors, then number of images formed are

A. 2

B. infinite

C. 3

D. 4

Answer: B

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28. The intensity of light at a distance 'r' from the axis of a long cylindrical source is inversely proportional to 'r'

A. increases

B. decrases

C. first increases and then decreases

D. remains same

Answer: B

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29. The image formed by a plane mirror is _____.

A. virtual

B. real

C. inverted

D. highly magnified

Answer: A

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30. Read the following statements and choose the correct option.

(A) Moon is a luminous source of light.

(B) A glow worm is a natural source of light.

A. Only A is true

B. Only B is true

C. Both A and B are true

D. Both A and B are false

Answer: B

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31. Which of the following is (are) man made source(s) of light?

A. Incandescent lamp

B. Fluorescent lamp

C. Hurricane lamp

D. All the above.

Answer: D

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32. Read the following statements and choose the correct option.

(A) Shadows are formed due to rectilinear propagation of lght.

(B) When the position of the earth is between sun and moon, lunar eclipse is formed.

A. Only A is true

B. Only B is true

C. Both A and B are true

D. Both A and B are false

Answer: C

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33. The image formed by a pinhole camera is _____.

A. real

B. inverted

C. The nature of image depends on the shape of pinhole

D. Both (a) and (b)

Answer: D

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34. The length of the straight line joining the centre of curvature and any point on the surface of a spherical mirror is the _____ of the mirror.

A. focal length

B. principal axis

C. radius of corvature

D. optic axis

Answer: C

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35. The image formd by a concave mirror can be _____.

A. real

B. virtual

C. magnified

D. All of the above

Answer: D

Watch Video Solution

36. A light ray is incident along the principal axis of a mirror after reflection _____.

A. retraces its path

B. passes through center of curvature

C. makes zero angle with the normal.

D. All the above.

Answer: D

Watch Video Solution

37. The rear view mirrors used in vehicles are _____.

A. plane

B. concave

C. convex

D. None of the above.

Answer: C

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38. Choose the correct statement from the following.

A. Light causes sensation of vision.

B. The sensation of heat is due to the presence of infrared radiation.

C. Light travels in a straight line.

D. All the above.

Answer: D

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39. One foot candle= _____ lux.

A. 12.56

B. 10.76

C. 700

D. None of these

Answer: B

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40. Write the following steps in sequential order to determine nature of the image formed by a concave mirror where an object is placed at the centre of curvature with the help of a ray diagram.

(A) Mark the position of the object infornt of the mirror at the centre of curvature.

(B) Draw a diagram, which represents a concave mirror.

(C) Draw two lines one passing through F and another line parallel to the principal axis and draw the path of the reflected rays.

(D) Draw the principal axis and mark the centre of curvature and principal focus.

(E) Mark the position of the image and study its nature.

A. BDACE

B. BCADE

C. ABDCE

D. ABCDE

Answer: A

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41. When an object of height $'h_o'$ is placed in front of a pinhole camera, an image of height $'h_i'$ is formed. If the object is placed at a distance 'u' from the pinahole camera, arrange the following steps to determine the widht of the camera in proper sequence.

(A) Determine the magnification (m).

(B) Note the value of h_o and h_1.

(C) Determine the image distance (v).

(D) Substitute the value of 'm' and 'u' in $m = \frac{v}{n}$ where u is the object distance.

(E) Take the value of 'v' as the width of the camera.

A. BDACE

B. BADCE

C. ECDBA

D. ABCDE

Answer: B

View Text Solution

	Column A	Column B
	AConvex mirror	( )a. Dispersion of light
42.	B. Concave mirror	( )b. Dentists
	C. Plane mirror	( )c. Kaleidoscope
	D. Prism	( )d. Street light reflectors

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	Column A	Column B
	A. Real image	( )a. Concave mirror
43.	B. Virtual image	( )b. Convex mirror
	C. Inner surface of a spoon	( )c. Erect
	D. Outer surface of a spoon	( )d. Inverted

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44.

Column A	Column B
A. Pinhole camrea	( )a. Ext
B. Kaleidoscope	( )b. Mul
C. Distance from pole to the center of a mirror	( )c. Rect
D. Distance from the pole of the mirror to the principal focus.	( )d. Foc
E. Tube light	( )e. Rad

View Text Solution

Level 2

1. The light rays from a point object placed at the focus of a concave mirror, after reflection

A. emerge perpendicular to the principal axis.

B. emerge parallel to the principal axis.

C. form real image.

D. Both (b) and (c)

Answer: D

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2. How many images are formed when an object is placed between two mirrors which make an angle of 45° with each other?

A. 8

B. 7

C. 2

D. infinite

Answer: B

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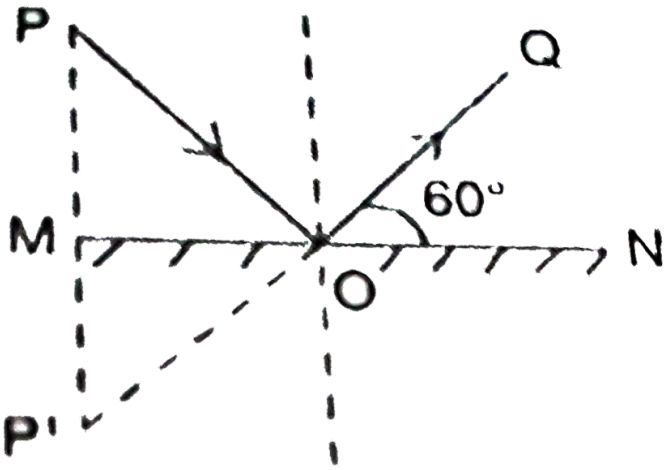
3. A light ray from an object 'P' is reflected from a mirror as shown in the figure, then



A. angle of incidence is 30°

B. $PM = MP^1$

C. $\angle PON = 120^\circ$

D. All the above.

Answer: D

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4. Choose the correct statement from the following.

A. In a glow worm the energy produced during a chemical reaction in its body is released in the form of light only.

B. An electric bulb glows, when the filament attains very high temperature due to the passage of current.

C. Due to he powerful reactions taking place in the sun, the energy produced by the sun consists of light and heat.

D. All the above.

Answer: D

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5. The number of image of an object placed between two plane parallel mirrors is _____

A. two

B. one

C. infinite

D. Cannot be determined.

Answer: C

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6. The image distance of an object which is placed at an infinite distance is equal to

A. the radius of curvature of the spheical mirror.

B. the focal length of the spherical mirror.

C. infinite in case of plane mirror.

D. Both (b) and (c)

Answer: D

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7. Read the following statements and choose the correct option.

(A) The angle made by the incident light ray with the plane of mirror is equal to the angle made by the reflected light ray with the plane of mirror.

(B) The angle between an incident light ray and a reflected light ray is twice that of the angle between the incident light ray and normal.

A. Only A is true

B. Only B is true

C. Both A and B are true

D. Both A and B are false

Answer: C

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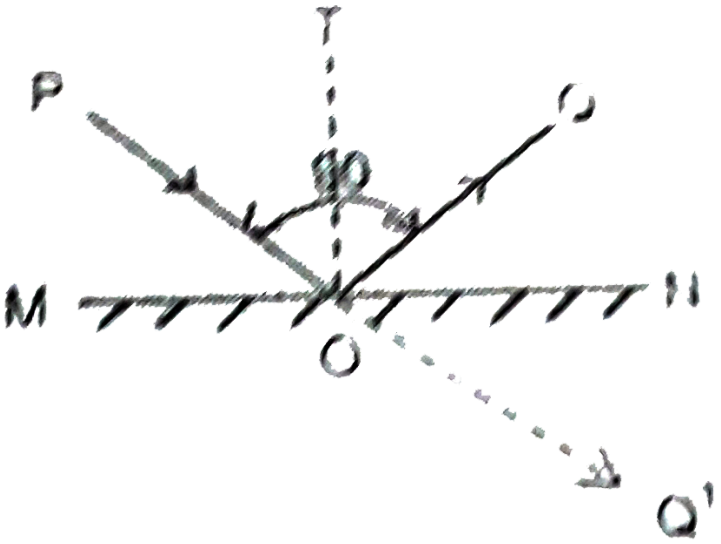
8. If a light ray is reflected from a mirror as shown in the figure, then



A. the glancing angle of light ray is 45°.

B. the reflected light ray is perpendicular to the incident light ray.

C. the reflected light is deviated through an alnge of 90°

D. All the above.

Answer: D

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9. Why does an aeroplane flying at a great altitude not cast a shadow on the earth ?

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10. Why cannot a mirror whose surface is rough produce a clear image?

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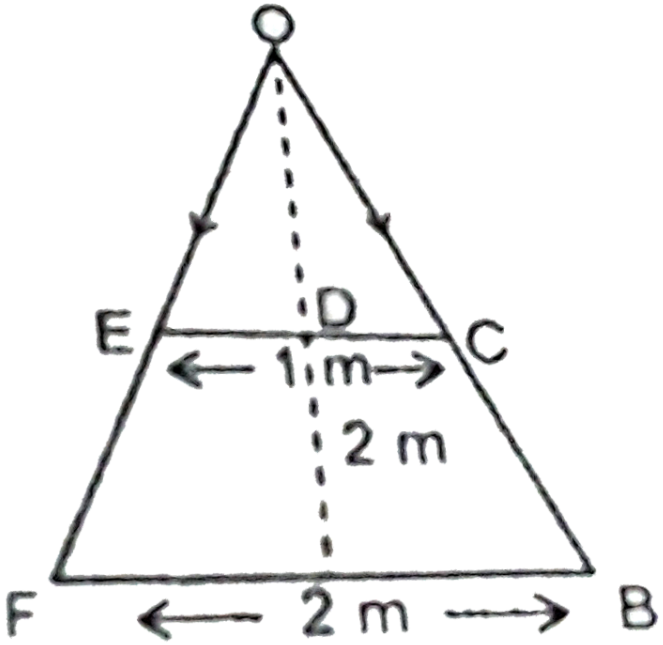
11. A clever student has used the concept of formation of shadow to determine the height of a long pole (OA). There was an electric bulb at the top of the vertical pole. The student placed an object of length 1 m at a height of 2 m from ground as shown in the figure of 2 m from the ground as shown in the figure. The size of the shaodw formed on the ground is 2 m. Determine the length of the pole.



[Hint: In triangle OAB and ΔODC

$\frac{OA}{OD} = \frac{AB}{DC}, DC = \frac{1}{2}EC$ and $AB = \frac{1}{2}FB$]

View Text Solution

12. A pin hole camera of which 1 m is focussed to an object at a distance 30 m from it. If the height of the object is 3 m, what is the height of the image? ltbgt ltimg src="https://d10lpgp6xz60nq.cloudfront.net/physics_images/PS_PHY_VII_C04_E width="80%"gt

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13. On a piece of paper certain odd number of horizontal lines at equal distances are drawn. An equal number of vertical lines at equal distances are also drawn, forming rectangles. The rectangles are coloured black or white, set alternately. Three coins are put at random in these rectangles. Let p be the probability of having two coins in rectangles of the same colour and the third in a rectangle of the other colour, and p' be the probability of having all the coins in the rectangles of the same colour. If $p:p'=16:5$ then find the number of horizontal lines drawn on the paper.

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14. Rama watched in discovery channel that ini outer space, at greater heights above the surface of the Earth where atmosphere does not exist appears completely dark. Explain what would be the reason for this?

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15. Express 100 W in candlepower.

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16. A physics teacher asked a student to find how much time does the light take to reach the earth if the distance between the sun and the earth is $150 \times 10^6 km$? Teacher also gives an extra input that velocity of light is $3 \times 10^8 ms^{-1}$. What would be the answer of the student?

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17. Why is a convex mirror used as a rear-view mirror in vehiciles? Eaxplain.

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18. A physics student proved that, sunlight consists of different colour's and even gives two examples to supprot this. Explain.

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19. Explain the formation of real and virtual images. Discuss what kind of images are formed in plane, convex and concave mirrors.

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20. In the head lights of a car, what kind of mirror are used? What is the use of mirror in the car head lights? Explain.

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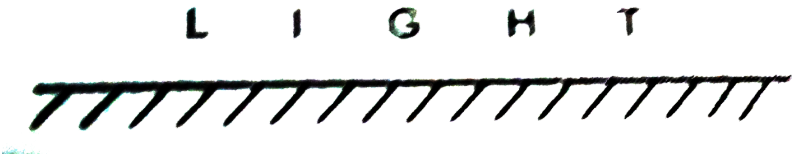
21. Vishal wrote the word 'LIGHT' on a paper and placed it infornt of a plane mirror (as shown in figure) and noticed how the letters of the word

appear in the mirror. Write down what he noticed in the mirror



(b) What is his observation about the mirror of the image? And thorugh what angle did the image get inverted when compared to the object?

View Text Solution

22. A bus driver is observing the image of a car in his rear view (side) mirror. How does the size of the image change when the car approaches the bus?

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23. When the physis teacher has given a task to determine the focal length of a concave mirror a clever boy in the class focussed the mirror to a distant object. He moved the screen in fornt of the mirror and caught a real image on a screen at a distance of 20 cm from the mirror and he

determined the focal length. Where should the object be place so that the object and the image are formed at the same position?

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Level 3

1. Two plane mirror are inclined at an angle θ. A light ray incident on one of the mirror undergoes multiple reflections. The angle of incidence on the first mirror is 15°. After reflection from the second mirror, if the light ray retraces its path, determine the volue of θ.

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2. Two identical mirrors are placed in a hollow cylindrical tube as show in the figure. A light ray incident on one of the mirrors undergoes multiple reflections. In the length of each mirror is 3 m, and the velocity of light is

$3 \times 10^8 ms^{-1}$, then find the time raken by the light ray incident on the mirror to come out of the bollow cylinder.

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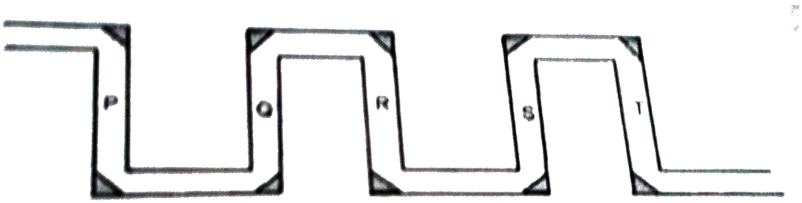
3. A student constructed a pericope by joining different periscopes P, Q, R, S and T as shown in the figuer. Then,

(i) how manyb times does the inccident light ray undergo reflection.

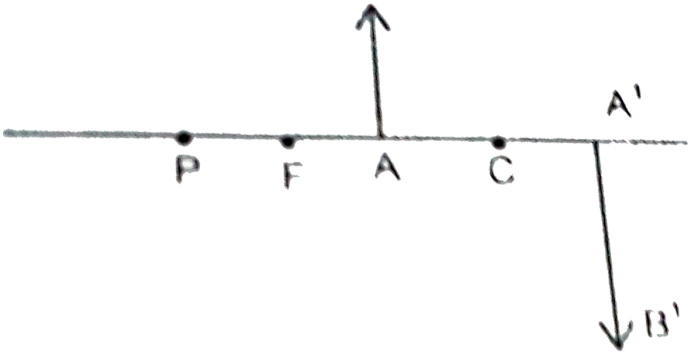
(ii) when he observes the image of an object using only one periscope what kind of variation can be observed in the image, when compared with the image formed by the periscope shwon in the figure



View Text Solution

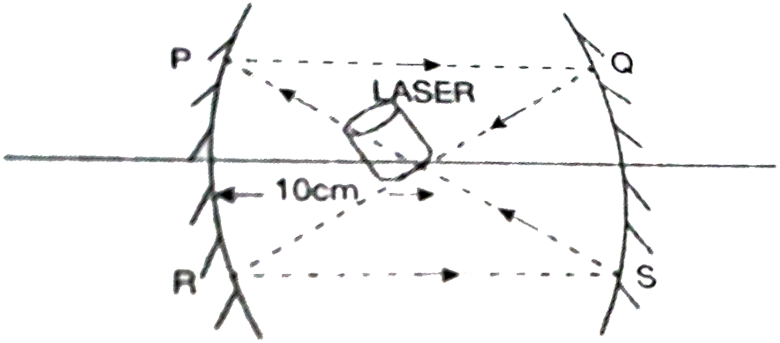
4. In the figure, AB is an object and A'B' is the image formed when a spherical mirror is placed at point P. Identify the type of mirror and

describe the nature of image. (Where F and C are focus and centre of curature of the mirror)



Watch Video Solution

5. A LASER source placed between two concave mirrors sends light rays as shown in the figure. If PQ and RS are parallel to the principal axis, determine the focal lengths and radius of curvatures of both the mirrors.



Watch Video Solution

Test 1

1. A light ray incidents at an angle 'I' on a plane mirror and undergoes reflection. Arrange the following steps in sequential order to calculate the angle of deviatino of the light ray.

The angle between the incident ray and the extended light ray is 180°.

In case of reflection, the angle of incidence (i) is equal to the angle of reflection (r). Then the angle between the incident ray and the reflected ray is 2i.

Draw an imaginary line, extending the incident light ray, which reprsesnts the actual path of the light ray.

The angle of deviation is the angle between the reflected light ray and the actual path of the light ray, i.e., $180^\circ - 2i$.

A. BADC

B. BCAD

C. BACD

D. CBDA

Answer: B

View Text Solution

2. Arrange the following steps about the working of a periscope in sequential order.

(A) The reflected light from the first mirror incidents on the second mirror with and angle of 45° to the normal and rotates by 90°

(B) A reflecting periscope consists of a tube bentwice at right angles. Two plane mirrors are provided at the bends with an angle of 45° with the frame of the tube.

(C) The reflected light from the second mirror comes out of the tube and enters the eye and causes the sensation of veision.

(D) The light rays from the object enter the periscope from the upper tube and are incident on the first mirror with an angle of incident as 45°.

A. BDAC

B. BCAD

C. BADC

D. ABCD

Answer: A

View Text Solution

3. The line joining the centre of curvature and pole of the mirror is called. _____.

A. the principal axis

B. y-axis

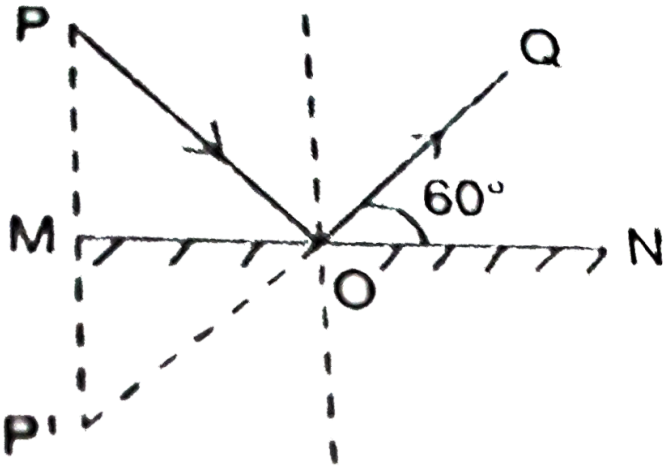
C. the centre axis

D. None of these

Answer: A

Watch Video Solution

4. A light ray from an object 'P' is reflected from a mirror as shown in the figure, then



A. angle of incidence is 30°,

B. $PM = MP^1$.

C. $\angle PON = 120^\circ$.

D. All the above.

Answer: D

Watch Video Solution

5. The angle of incident of a light rays incidents on the surface of a plane mirror is 30°. The angle of deviation is

A. 120°

B. 30°

C. 60°

D. 90°

Answer: A

View Text Solution

6. An objcet is placed between two mirrors which make an angle of 45° with each other, then the number of images formed are ____.

A. 8

B. 7

C. 2

D. infinite

Answer: B

Watch Video Solution

7. Choose the correct statement from the following.

A. In a glow worm the energy produced during a chemical reaction in its body is releeased in the form of light only.

B. An electric bulb glows, when the filament attains very high temperature due to the passage of current.

C. Due to he powerful reactions taking place in the sun, the energy produced by the sun consists of light and heat.

D. All the above.

Answer: D

Watch Video Solution

8. The image distance in case of a convex mirror can be

A. greater than focal length.

B. less than focal length

C. equal to focal length

D. Both (b) and (c)

Answer: D

Watch Video Solution

9. Read the following statements and choose the correct option.

(A) Onlly a point source forms a complete umbra.

(B) An extended source forms a complete umbra and penumbra.

A. Only A is true

B. Only B is true

C. Both A and B are true

D. Both A and B are false

Answer: C

Watch Video Solution

10. Assertion (A): Convex mirrors are used as rear view mirrors in vehicles. Reason:(R) : The field ivew of convex mirror is maximum and they form diminished images.

A. Both A and R are correct and R is the corrcet explanation of A.

B. Both A and R are correct but R is not the correct explanation of A.

C. A is correct and R is incorrect.

D. Both A and R are incorrect.

Answer: A

Watch Video Solution

11. Assertion (A): A rianbow is formed when white light is inicdent on raindrops.

Reason (R): White light contains seven colours and it undergoes dispersion inside a raindrop.

A. Both A and R are correct, and R is the correct explanation of A.

B. Both A and R are correct, but R is not correct explanation of A.

C. A is correct and R is incorrect.

D. Both A and R are incorrect.

Answer: A

Watch Video Solution

12. After reflection, the light rays from a point object at the focus of a concave mirror,

A. emerge perpendicular to the principal axis.

B. emerge parallel to the principal axis.

C. form real image.

D. Both (b) and (c)

Answer: D

Watch Video Solution

13. Read the following statements and choose the correct option.

Planets are not luminous bodies.

The sun is the nearest star to us from which the earth recives most of the light.

A. Only A is true

B. Only B is true

C. Both A and B are true

D. Both A and B are false

Answer: C

Watch Video Solution

14. Which of the following is (are) natural source(s) of light?

A. Planets

B. Glow worm

C. Stars

D. Both (b) and (c)

Answer: D

Watch Video Solution

15. Match the following:

Column A	Column B
(A)Laterally inverted image	$(\quad)(a)$Convex mirror
(B)Light rays emitted from a candle	$(\quad)(b)$Parallel beam of lig
(C)Concave mirror	$(\quad)(c)$Convergent light ra
(D)Reflected light rays from a concave mirror	when the object is at the
	$(\quad)(e)$Inverted and real i
	$(\quad)(f)$Divergent light ray

A. $A \to a, B \to f, C \to e, D \to c$

B. $A \to d, B \to c, C \to e, D \to f$

C. $A \to d, B \to f, C \to e, D \to c$

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

Answer: C

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Test 2

1. A ray of light is incident on a plane mirror, making an angle 'q' with the surface of the mirror. Arrange the following steps in sequential order to calculate the angle between the incident light ray and the reflected light ray.

(A) Draw a normal line on the plane mirror at the point of incidence of the light ray.

(B) Note down the angle between the plane mirror and the incident light ray.

(C) The sum of the angle of incidence and the angle between the plane mirror and the incident ray is 90°.Determine the angle of incidence.

(D) From the laws of reflection, the angle of incidence is equal to the angle of reflection. Then the sum of the angle of incidence and the angle of reflection gives the angle between the incident light ray and the reflected light ray.

A. DACB

B. CDAB

C. BACD

D. DBAC

Answer: C

Watch Video Solution

2. Write the following steps in sequential order to determine nature of the image formed by a concave mirror when an object is placed between the pole and the prinicpal focus of the mirror, with the help of a ray diagram.

(A) Draw two incident light rays, one parallel to the principal axis and the other coming from the center of curvature and draw the paths of the reflected light rays.

(B) The reflected light rays are diverging. So, draw the extended lines till they intersect.

(C) Draw a concave mirror and mark the pole, the principal focus, the centre of curvature of the mirror.

(D) Mark the image at the point of intersection of the extended light rays and write the nature of the image.

(E) Draw the principal axis and mark the position of the object on the principal axis between the pole and the principal focus.

A. CADBE

B. ECBAD

C. CBAED

D. CEABD

Answer: D

View Text Solution

3. The length of the straight line joining the centre of curvature and any point on the surface of a spherical mirror is the _____ of the mirror.

A. focal length

B. principal axis

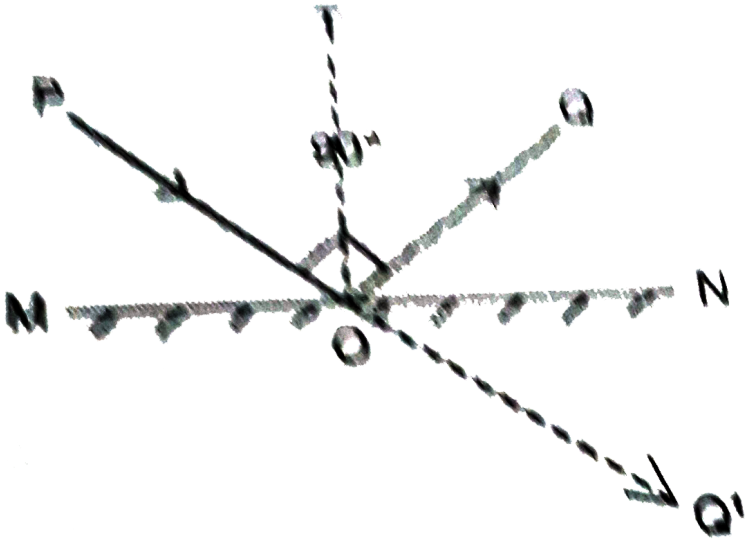
C. radius of corvature

D. optic axis

Answer: C

Watch Video Solution

4. If a light ray is reflected from a mirror as shown in the figure, then



A. the glancing angle of light ray is 45°.

B. the reflected light ray is perpendicular to the incident light ray.

C. the incident ray is deviated through an angle of 90°.

D. All the above.

Answer: D

Watch Video Solution

5. The angle of deviation of a light ray reflected by a plane mirror is 150°.

The angle of reflection is ____.

A. 30°

B. 60°

C. 15°

D. 10°

Answer: C

Watch Video Solution

6. What is the number of images of an object held between two parallel plane mirrors ?

A. two

B. one

C. infinite

D. Cannot be determined.

Answer: C

Watch Video Solution

7. Choose the correct statement from the following.

A. Light is the only form of energy which causes the sensation of vision.

B. The senastion of heat is due to the presence of infrared radiation.

C. Light travels in a straight line.

D. All the above.

Answer: D

Watch Video Solution

8. What is the image distance of an object which is placed at an infinite distance ?

A. the radius of curvature of the spheical mirror.

B. the focal length of the spherical mirror.

C. infinity, in case of the plane mirror.

D. Both (b) and (c)

Answer: D

Watch Video Solution

9. Read the following statements and choose the correct option.

(A) Shadows are formed due to rectilinear propagation of lght.

(B) When the position of the earth is between sun and moon, lunar eclipse is formed.

A. Only A is true

B. Only B is true

C. Both A and B are true

D. Both A and B are false

Answer: C

Watch Video Solution

10. Assertion (A): A convex mirror always forms a diminished and virtual image.

Reason (R): The laws of reflection are not applicable in the case of shpherical mirrors.

A. Both A and R are conrrent and R is the correct explanation of A.

B. Both A and R are correct but R is not the correct explanation of A.

C. A is correct and R is incorrect.

D. Both A and R are incorrect.

Answer: C

Watch Video Solution

11. Assertion (A): Photosynthesis takes place only during the day.

Reason: (R): Light energy is required for the process of photosynthesis.

A. Both A and R are correct and R is not the correct explanation of A.

B. Both A and R are correct but R is not the correct explanation of A.

C. A is correct and R is incorrect.

D. Both A and R are incorrect.

Answer: A

Watch Video Solution

12. After reflecton, a light ray which is incident along the principal axis of a mirror,

A. retraces its path

B. passes through center of curvature

C. makes zero angle with the normal.

D. All the above.

Answer: D

Watch Video Solution

13. Raed the following statement and choose the correct option.

(A) Moon is a luminous source of light.

(B) A glow worm is a natural source of light.

A. Only A is true

B. Only B is true

C. Both A and B are true

D. Both A and are false

Answer: B

Watch Video Solution

14. Which of the following is (are) man made source(s) of light?

A. Incandescent lamp

B. Fluorescent lamp.

C. Hurricane lamp

D. All the above.

Answer: D

Watch Video Solution

15. Match the following: It

	Column A			Column B
(P)	When a light ray incidents normally on a plane mirror, the angle of deviation is	( )	(p)	New moon day
(Q)	Chlorophyll	( )	(q)	120°
(R)	Solar eclipse	( )	(r)	Green colour
(S)	Lunar eclipse	( )	(s)	180°
(T)	When a light ray incidents with an angle of incidence as 30° on a plane mirror, the angle of deviation is	( )	(t)	Full moon night
			(u)	White colour

A. $P \rightarrow s, Q \rightarrow r, R \rightarrow q, S \rightarrow t, T \rightarrow p$

B. $P \rightarrow s, Q \rightarrow r, R \rightarrow p, S \rightarrow t, T \rightarrow q$

C. $P \rightarrow s, Q \rightarrow r, R \rightarrow t, S \rightarrow p, T \rightarrow q$

D. $P \rightarrow s, Q \rightarrow u, R \rightarrow p, S \rightarrow t, T \rightarrow q$

Answer: B

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Example

1. A candle of height 6 cm is placed at 2 cm distance from the pinhole camera. If the width of the camera is 4 cm, find the magnification and size of the image.

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2. What happens to a light ray that is incident on a plane mirror normally?

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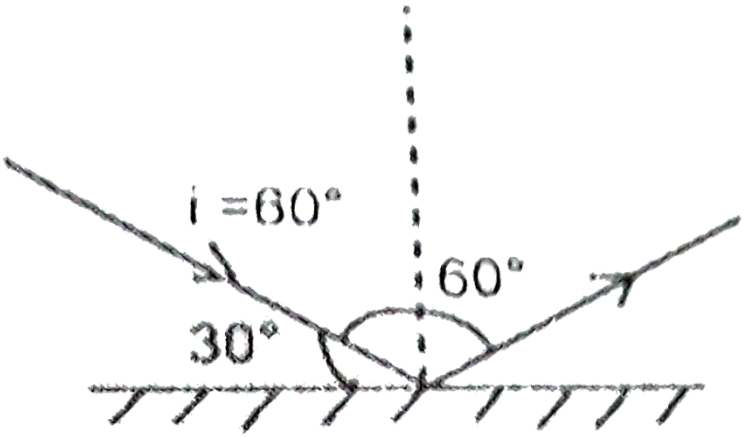
3. If a light ray incident on a plane mirror makes an angle 30° with it, find the angle of incidence and angle of reflection.



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4. A concave mirror has radius of curvature of 60cm. Find its focal length

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Test Your Concepts Very Short Answer Type Questions Fill In The Blanks

1. Glow-worm is a___ source of light.

Watch Video Solution

2. When the Earth comes into the umbra and penumbra of the Moon, _____ is formed.

Watch Video Solution

3. The phenomenon of light involved in the formation of shadow is___

Watch Video Solution

4. Periscope works on the pirnciple of _____ of light.

Watch Video Solution

5. The image formed by a plane mirror is _____.

Watch Video Solution

6. Real image is formed by a _____ mirror.

Watch Video Solution

7. The image of an object formed by the inner surface of a spoon, when it is placed very close to it is___and__

Watch Video Solution

8. 1 watt = _____ lumen.

Watch Video Solution

9. Two plane mirrors are inclined at an angle of 30° symmetrically , the number of images formed are ___

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Test Your Concepts Very Short Answer Type Questions Select The Correct Alternative

1. Which of the following is opaque?

A. Water

B. Glass

C. Mirror

D. Prism

Answer: C

Watch Video Solution

2. When the Earth comes into the umbra and penumbra of the Moon, _____ is formed.

A. lunar eclipse

B. solar eclipse

C. partial lunar eclipse

D. None of the above

Answer: B

Watch Video Solution

3. If a ray of light incident on a plane mirror is such that it makes an angle of 30° with the mirror, then the angle made by the reflected ray with the mirror is

A. 35°

B. 60°

C. 90°

D. 30°

Answer: D

Watch Video Solution

4. The direction of light can be changed by _____

A. a plane mirror

B. a piece of paper

C. a stone

D. All of the above

Answer: D

Watch Video Solution

5. The size of an image formed by a plane mirror is ____.

A. larger than the size of the object.

B. smaller than the size of the object.

C. equal to the size of the object.

D. Cannot be determined.

Answer: C

Watch Video Solution

6. The image of an object formed on the outer surface of a spoon is always

A. erect

B. virtual

C. inverted

D. Both (a) and (b)

Answer: D

Watch Video Solution

7. A magnified virtual image can be formed by a_____

A. plane mirror

B. concave mirror

C. convex mirror

D. All of the above

Answer: B

Watch Video Solution

8. When a ray of light passes through a prism,

A. the deviation of red light is maximum.

B. the deviation of violet light is maximum.

C. the deviation of blue light is maximum.

D. all rays deviate equally.

Answer: B

Watch Video Solution

9. Image formed by a convex mirror is

A. virtual

B. erect

C. smaller in size than the object

D. All of the above

Answer: D

Watch Video Solution

10. The modern unit of intensity of light is _____.

A. lumen

B. candle power

C. lux

D. All of the above

Answer: C

Watch Video Solution

11. Read the following statements and choose the correct option.

(A) Planets are not luminous bodies.

(B) The sun is the nearest star to us from which the earth receives most of the light.

A. Only A is true

B. Only B is true

C. Both A and B are true

D. Both A and B are false

Answer: C

Watch Video Solution

12. Which of the following is (are) natural source(s) of light?

A. Planets

B. Glow-worm

C. Stars

D. Both (b) and (c)

Answer: D

Watch Video Solution

13. Read the following statements and choose the correct option.

(A) Onlly a point source forms a complete umbra.

(B) An extended source forms a complete umbra and penumbra.

A. Only A is true

B. Only B is true

C. Both A and B are true

D. Both A and B are false

Answer: C

Watch Video Solution

14. The line joining the centre of curvature and pole of the mirror is called. _____.

A. the principal axis

B. y-axis

C. the centre axis

D. None of these

Answer: A

Watch Video Solution

15. Which of the following is not exhibiting convergent evolution ?

A. Convex mirror

B. Concave mirror

C. Plane mirror

D. Both (a) and (b)

Answer: B

Watch Video Solution

16. The image distance in case of a convex mirror can be

A. greater than focal length

B. less than focal length

C. equal to focal length

D. Both (b) and (c)

Answer: D

Watch Video Solution

17. Laws OF reflection

A. the angle of incidence (i) = the angle of reflection

B. the incident ray, the reflected ray and the normal lie in the same plane.

C. the incident ray and the reflected ray lie on either side of the normal

D. All of the above

Answer: D

Watch Video Solution

18. One lumen = _____ candle power.

A. 10.76

B. 12.56

C. 700

D. None of these

Answer: B

Watch Video Solution

19. An object is placed in front of a mirror. Arrange the following steps in sequential order to determine the nature of the mirror.

(A) Check whether the image formed is virtual or real.

(B) Check whether the virtual image formed is dimished, magnified or same size as that of the object.

(C) If the image formed is real, the mirror used is concave.

(D) If a magnified vritual image is formed, the mirror is concave, if a dimished virtual image is formed, the morror is convex and if size of the image is equal to the size of the object, plane mirror is used.

A. ACBD

B. BDCA

C. ACDB

D. BADC

Answer: A

Watch Video Solution

20. Write the following steps in sequential order to verify the laws of reflection.

(A) Draw a normal at the point where the two lines PQ and P, Q, meet. (B) Remove the pins and the mirror and join P, Q similarly join P.Q. (C) View the image of P and Q and fix two more pins P, and Q, such that the images of pins P, Q and P, Q are along the same line. (D) Draw a straight line on a white paper spread on the table and fix a plane mirror on the line. (E) Fix two pins P and Q in front of the mirror. (F) Measure the angle of incidence and angle of reflection and compare them to verify the law reflection

A. DABECF

B. ACDBFE

C. DECBAF

D. DBACEF

Answer: C

View Text Solution

Test Your Concepts Very Short Answer Type Questions Match The Column

1. Match the entries given in Column A with the appropriate ones in Column B.

	Column A			Column B
A.	A plane mirror	( )	a.	Luminous source
B.	Virtual image formed by a concave mirror	( )	b.	Can be caught on a screen.
C.	Reflection of light	( )	c.	Magnified
D.	The Sun	( )	d.	Real
E.	Real image	( )	e.	Vacuum
F.	Prism	( )	f.	Image distance is equal to object distance.
G.	Image on the retina	( )	g.	Dispersion
H.	Velocity of light is maximum	( )	h.	Periscope

Watch Video Solution

2. Match the entries given in Column A with the appropriate ones in Column B.

	Column A			Column B
A	Air	( )	a.	Bioluminescence
B.	Pure water	( )	b.	Opaque medium
C.	Wood	( )	c.	Homogeneous medium
D.	Glow-worm	( )	d.	Heterogeneous medium

Watch Video Solution

3. Match the entries given in Column A with the appropriate ones in Column B.

	Column A			Column B
A.	Intensity of light	( )	a.	Plane mirror
B.	Rainbow	( )	b.	Shadow
C.	Looking glass	( )	c.	Hot source
D.	Eclipse	( )	d.	Lumen
E.	Filament bulb	( )	e.	Dispersion

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Test Your Concepts Very Short Answer Type Questions Answer The Questions

1. Distinguish between luminous and non-luminous bodies.

Watch Video Solution

2. Define an optical medium.

Watch Video Solution

3. List out the difference between a point source and an extended source of light.

Watch Video Solution

4. What is rectilinear propagation of light?

Watch Video Solution

5. What is a lunar eclipse?

Watch Video Solution

6. What is reflection?

Watch Video Solution

7. What is a real image?

Watch Video Solution

8. Write the mathematical expression to calculate the number of image formed by two plne mirrors placed symmetrically at an angle $'\theta'$.

Watch Video Solution

9. Define centre of curvature.

Watch Video Solution

10. How many colours does white light consist of and what are they?

Watch Video Solution

11. What are hot and cold sources of light?

Watch Video Solution

12. Define umbra and penumbra.

Watch Video Solution

13. What is Solar Eclipse | What Happens During Solar Eclipse | Last Solar Eclipse Of The Decade

Watch Video Solution

14. DIFFUSED REFLECTION

Watch Video Solution

15. What is the virtual image ? Give one situation where a virtual image is formed.

Watch Video Solution

16. Define pole, axis, equator and magnetic meridian of a bar magnet

Watch Video Solution

17. Define principal focus.

Watch Video Solution

18. Write the relationship between focal length and radius of curvature.

Watch Video Solution

19. What happens to white light when it passes through a prism?

Watch Video Solution

20. What is the SI unit of luminous intensity?

Watch Video Solution

Test Your Concepts Short Answer Type Questions

1. Define transparent, translucent and opaque optical media with examples.

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2. Pinhole camera

Watch Video Solution

3. (a) What are the characteristics of an image formed by a plane mirror?

(b) Write few uses of plane mirror.

Watch Video Solution

4. (a) What are the characteristics of an image formed by a plane mirror?

(b) Write few uses of plane mirror.

Watch Video Solution

5. Describle Newton's disc.

Watch Video Solution

6. What are the three rays we consider to draw ray diagrams in order to show the formation of images by spherical mirrors? How do they propagate after reflection?

Watch Video Solution

7. Explain how an opaque paper can be made translucent.

Watch Video Solution

8. Describe ray of light, beam of light, parellel beam of light.

Watch Video Solution

9. (a) Sate laws of reflection.

(b) Draw a ray diagram to represent formation of an image of a point source by a plane mirror.

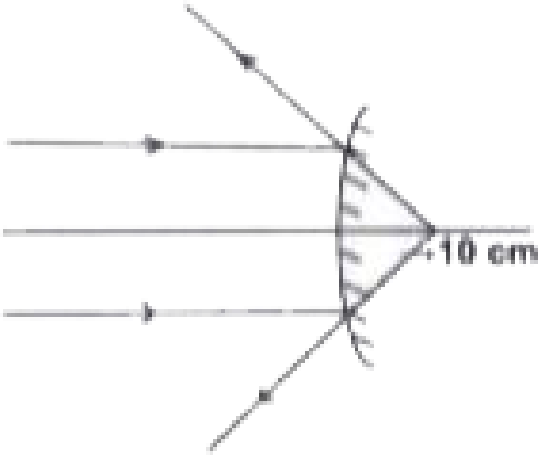
Watch Video Solution

10. (a) Sate laws of reflection.

(b) Draw a ray diagram to represent formation of an image of a point source by a plane mirror.

Watch Video Solution

11. Determine the radius of curvature of a convex mirror shown below.



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12. Why is the light from the moon called cool light and the light from the sum called hot light?

Watch Video Solution

13. During lightning, thunder is produced due to

Watch Video Solution

14. (i) Distinguish between concave and convex mirrors.

(ii) Write few uses of spherical mirror.

Watch Video Solution

15. (i) Distinguish between concave and convex mirrors.

(ii) Write few uses of spherical mirror.

Watch Video Solution

16. What are cold and hot sources of light? Give examples for each.

Watch Video Solution

17. Sun light is not necessary for the growth of plants.

Watch Video Solution

Test Your Concepts Long Answer Type Questions

1. Write two phenmoena which can be understood by rectilinear propagtion of light.

Watch Video Solution

2. How can laws of reflection be experimentally verified?

Watch Video Solution

3. Draw the ray diagrams to represent the formation of image when object is at infinity and any distance between infinity and pole of a convex mirror.

Watch Video Solution

4. Describe few sources of light briefiy.

Watch Video Solution

5. Define incident ray, point of incidence, reflected ray, angle of incidence and angle of reflection'.

Watch Video Solution

6. Describe the working of a periscope

Watch Video Solution

7. Explain the formation of images by a concave mirror with the help of a ray diagram.

Watch Video Solution

Concept Application Level 1 True Or False

1. Moon is a luminous object.

Watch Video Solution

2. Eclipses are formed due to recitinear propagation of light.

Watch Video Solution

3. The path of light is straight line.

Watch Video Solution

4. Sun light is not necessary for the growth of plants.

Watch Video Solution

5. A virtual image can be obtained on a screen.

Watch Video Solution

6. The rare-view mirror used in vehicles is a convex mirror.

Watch Video Solution

7. Rainbow is observed when the sun is

Watch Video Solution

8. The sky appears blue due to scattering of light.

Watch Video Solution

Concept Application Level 1 Fill In The Blanks

1. Oli paper is an example of _____ medium of light.

Watch Video Solution

2. An electric bulb converst _____ energy to ____ energy.

Watch Video Solution

3. Real image is formed by a _____ mirror.

Watch Video Solution

4. Can virtual image be formed on the retina in a seeing process?

Watch Video Solution

5. Which pigment acts directly to convert light energy to chemical energy?

Watch Video Solution

6. When the Moon is not completely visible from the Earth, we call it _____ eclipse.

Watch Video Solution

7. A concave mirror is formed from a sphere of radius 20 cm. The image of an object at an infinite distance is formed at a distance of _____ cm from the mirror.

Watch Video Solution

8. _____ mirror is used as shaving mirror.

Watch Video Solution

9. If the angle of incidence on a plane mirror is 30°, then angle between the reflected ray and the plane mirror is _____

Watch Video Solution

10. When an object is placed between the focus and the pole of a concave mirror, the image formed is

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Concept Application Level 1 Select The Correct Alternative

1. The difference in the brightness of objects is due to difference in the___of light entering into our eyes.

A. intensity

B. colour of light

C. speed

D. None of these

Answer: A

Watch Video Solution

2. The image of an object placed in front of a concave mirror found to coincide with object itself. The position of the object is _____.

A. at C

B. between C and F

C. between F and pole

D. at F

Answer: A

Watch Video Solution

3. The image of an object is formed at infinite distance from a concave mirror. The position of the object is _____.

A. at C

B. between C and F

C. at F

D. between pole and F

Answer: C

Watch Video Solution

4. A magnified virtual image can be formed by a_____

A. concave

B. plane

C. convex

D. centre of curvature

Answer: A

Watch Video Solution

5. Geometric centere of a mirror is called _____ mirror.

A. pole

B. principal focus

C. optic centre

D. centre of curvature

Answer: A

Watch Video Solution

6. A ray of light passing through centre of curvature of a concave mirror retraces its path on reflection. Why ?

A. passes through the principal focus

B. retraces its path

C. passes along the principal focus

D. None of these

Answer: B

Watch Video Solution

7. The phenomenon of light which is responsible for vision is _____.

A. refraction

B. irregular reflection

C. dispersion

D. Both (b) and (c)

Answer: B

Watch Video Solution

8. Which of the following is (are) true in the case of a plane mirror?

A. Object distance = image distance.

B. Object size = image size.

C. The image formed is virtual

D. All of the above

Answer: D

Watch Video Solution

9. When an object is placed between two parallel mirrors, then number of images formed are

A. 2

B. infinite

C. 3

D. 4

Answer: B

Watch Video Solution

10. Intensity of sound at a point is its distance from the source

A. increases

B. decreases

C. first increases and then decreases

D. remains same

Answer: B

Watch Video Solution

11. The image formed by a plane mirror is _____.

A. virtual

B. real

C. inverted

D. highly magnified

Answer: A

Watch Video Solution

12. Read the following statements and choose the correct option.

(A) Moon is a luminous source of light.

(B) A glow worm is a natural source of light.

A. Only A is true

B. Only B is true

C. Both A and B are true

D. Both A and B are false

Answer: B

Watch Video Solution

13. Which of the following is (are) man made source(s) of light?

A. Incandescent lamp

B. Fluorescent lamp

C. Hurricane lamp

D. All of the above

Answer: D

Watch Video Solution

14. Read the following statements and choose the correct option.

(A) Shadows are formed due to rectilinear propagation of lght.

(B) When the position of the earth is between sun and moon, lunar eclipse is formed.

A. Only A is true

B. Only B is true

C. Both A and B are true

D. Both A and B are false

Answer: C

Watch Video Solution

15. The image formed by a pinhole camera is _____.

A. real

B. inverted

C. The nature of image depends on the shape of pinhole

D. Both (a) and (b)

Answer: D

Watch Video Solution

16. The length of the straight line joining the centre of curvature and any point on the surface of a spherical mirror is the _____ of the mirror.

A. focal length

B. principal axis

C. radius of curvature

D. optic axis

Answer: C

Watch Video Solution

17. The image formed by a concave mirror

A. real

B. virtual

C. magnified

D. All of the above

Answer: D

Watch Video Solution

18. A light ray is incident along the principal axis of a mirror after reflection _____.

A. retraces its path

B. passes through centre of curvature

C. makes zero angle with the normal

D. All the above

Answer: D

Watch Video Solution

19. The rear view mirrors used in vehicles are _____.

A. plane

B. concave

C. convex

D. None of the above

Answer: C

Watch Video Solution

20. Choose the correct statement from the following.

A. Light causes sensation of vision.

B. The sensation of heat is due to the presence of infrared radiation.

C. Light travels in a straight line.

D. All the above

Answer: D

Watch Video Solution

21. One foot candle= _____ lux.

A. 12.56

B. 10.76

C. 700

D. None of these

Answer: B

Watch Video Solution

22. Write the following steps in sequential order to determine nature of the image formed by a concave mirror where an object is placed at the centre of curvature with the help of a ray diagram.

(A) Mark the position of the object infornt of the mirror at the centre of curvature.

(B) Draw a diagram, which represents a concave mirror.

(C) Draw two lines one passing through F and another line parallel to the principal axis and draw the path of the reflected rays.

(D) Draw the principal axis and mark the centre of curvature and principal focus.

(E) Mark the position of the image and study its nature.

A. BDACE

B. BCADE

C. ABDCE

D. ABCDE

Answer: A

Watch Video Solution

Watch Video Solution

23. When an object of height 'h_0' is placed in front of a pinhole camera, an image of height 'h_i' is formed. If the object is placed at a distance 'u' from the pinhole camera, arrange the following steps to determine the width of the camera in proper sequence.

(A) Determine the magnification (m). (B) Note the value of h_0 and h_i (C) Determine the image distance (v). (D) Substitute the value of 'm' and 'u' in m $=\frac{v}{u}$ where u is the object distance. (E) Take the value of 'v' as the width of the camera.

A. BDACE

B. BADCE

C. ECDBA

D. ABCDE

Answer: B

Watch Video Solution

Concept Application Level 1 Match The Column

1. Match the entries given in Column A with the appropriate ones in Column B.

	Column A			Column B
A	Convex mirror	( )	a.	Dispersion of light
B.	Concave mirror	( )	b.	Dentists
C.	Plane mirror	( )	c.	Kaleidoscope
D.	Prism	( )	d.	Street light reflectors

Watch Video Solution

2. Match the entries given in Column A with the appropriate ones in Column B.

	Column A			Column B
A	Real image	( )	a.	Concave mirror
B.	Virtual image	( )	b.	Convex mirror
C.	Inner surface of a spoon	( )	c.	Erect
D.	Outer surface of a spoon	( )	d.	Inverted

Watch Video Solution

3. Match the entries given in Column A with the appropriate ones in Column B.

Column A		Column B
A. Pinhole camera	( )	a. Extended source
B. Kaleidoscope	( )	b. Multiple reflection
C. Distance from pole to the centre of a mirror	( )	c. Rectilinear propagation
D. Distance from the pole of the mirror to the principal focus.	( )	d. Focal length
E. Tube light	( )	e. Radius of curvature.

Watch Video Solution

Concept Application Level 2

1. The light rays from a point object placed at the focus of a concave mirror, after reflection

A. emerge perpendicular to the principal axis.

B. emerge parallel to the principal axis.

C. form real image.

D. Both (b) and (c)

Answer: D

Watch Video Solution

2. An objcet is placed between two mirrors which make an angle of 45° with each other, then the number of images formed are _____.

A. 8

B. 7

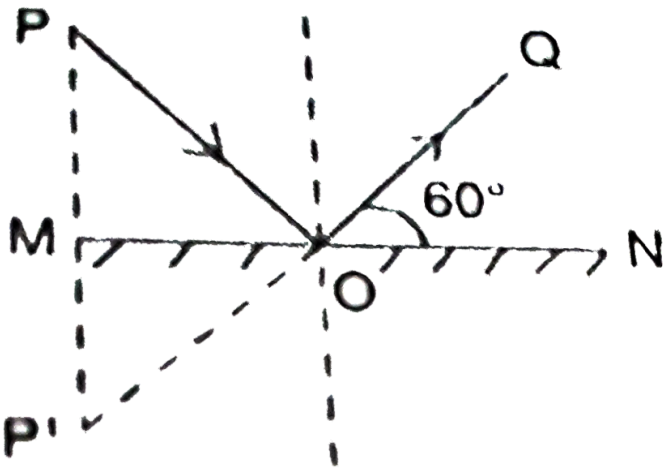
C. 2

D. infinite

Answer: B

Watch Video Solution

3. A light ray from an object 'P' is reflected from a mirror as shown in the figure, then



A. angle of incidence is 30°

B. $PM = MP^1$

C. $\angle PON = 120^\circ$

D. All of the above

Answer: D

Watch Video Solution

Watch Video Solution

4. Choose the correct statement(s) from the following.

A. In a glow-worm the energy produced during a chemical reaction in its body is released in the form of light only.

B. An electric bulb glows, when the filament attains very high temperature due to the passage of current.

C. Due to the powerful reactions taking place in the sun, the energy produced by the sun consists of light and heat.

D. All of the above

Answer: D

Watch Video Solution

5. The number of image of an object placed between two plane parallel mirrors is _____

A. two

B. one

C. infinite

D. Cannot be determined

Answer: C

Watch Video Solution

6. The image distance of an object which is placed at an infinite distance is equal to

A. the radius of curvature of the spherical mirror.

B. the focal length of the spherical mirror.

C. infinity, in case of plane mirror.

D. Both (b) and (c)

Answer: D

Watch Video Solution

7. Read the following statements and choose the correct option.

(A) The angle made by the incident light ray with the plane of mirror is equal to the angle made by the reflected light ray with the plane of mirror.

(B) The angle between an incident light ray and a reflected light ray is twice that of the angle between the incident light ray and normal.

A. Only A is true

B. Only B is true

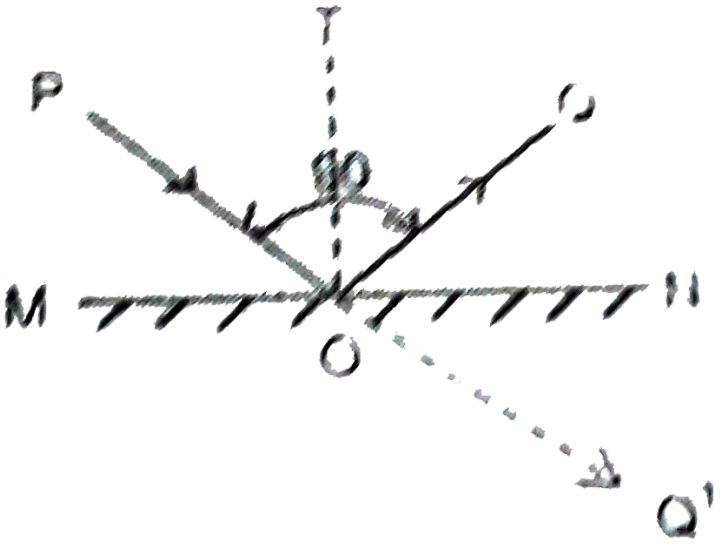
C. Both A and B are true

D. Both A and B are false

Answer: C

Watch Video Solution

8. If a light ray is reflected from a mirror as shown in the figure, then



A. the glancing angle of light ray is 45°

B. the reflected light ray is perpendicular to the incident light ray.

C. the reflected light is deviated through an angle of 90°

D. All of the above

Answer: D

Watch Video Solution

9. Why does not an aeroplane or a bird cast a shadow when they are at greater heights?

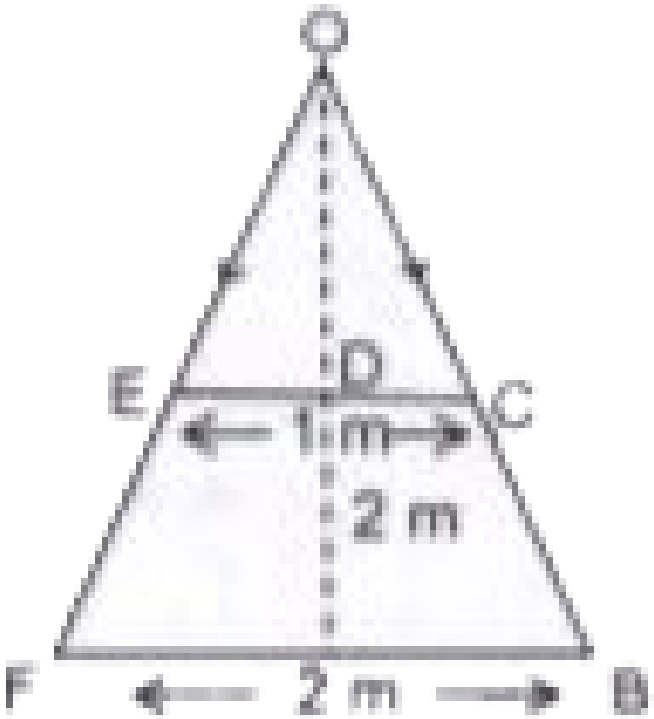
Watch Video Solution

10. Why cannot a mirror whose surface is rough produce a clear image?

Watch Video Solution

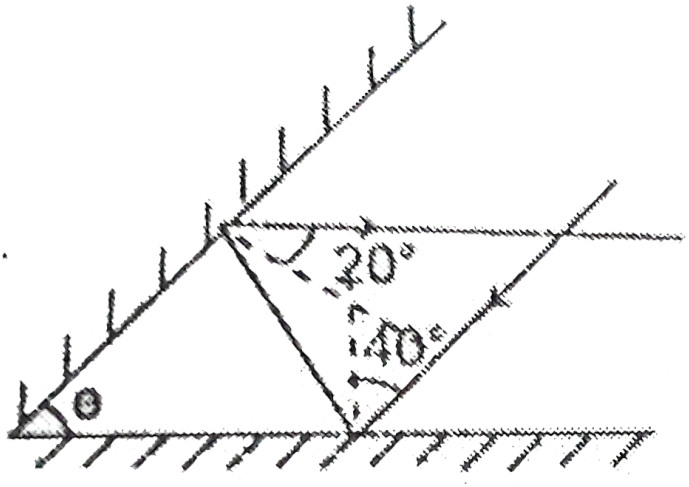
11. A clever student has used the concept of formation of shadow to determine the height of a long pole (OA). There was an electric bulb at the top of the vertical pole. The student placed an object of length 1 m at a height of 2 m from the ground as shown in the figure. The size of the

shadow formed on the ground is 2 m. Determine the length of the pole.



View Text Solution

12. A pin hole camera of which 1 m is focussed to an object at a distance 30 m from it. If the height of the object is 3 m, what is the height of the



image? ltbgt

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13. Number of images formed by two inclined plane mirrors

Watch Video Solution

14. Rama watched in discovery channel that ini outer space, at greater heights above the surface of the Earth where atmosphere does not exist appears completely dark. Explain what would be the reason for this?

Watch Video Solution

15. Express 100 W in candlepower.

Watch Video Solution

16. A physics teacher asked a student to find how much time does the light take to reach the earth if the distance between the sun and the earth is $150 \times 10^6 km$? Teacher also gives an extra input that velocity of light is $3 \times 10^8 ms^{-1}$. What would be the answer of the student?

Watch Video Solution

17. Why is a convex mirror used as a rear-view mirror in vehiciles? Eaxplain.

Watch Video Solution

18. A physics student proved that, sunlight consists of different colour's and even gives two examples to supprot this. Explain.

Watch Video Solution

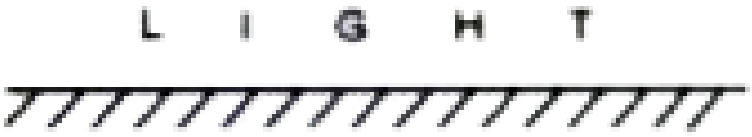
19. Explain the formation of real and virtual images. Discuss what kind of images are formed in plane, convex and concave mirrors.

Watch Video Solution

20. In the head lights of a car, what kind of mirror are used? What is the use of mirror in the car head lights? Explain.

Watch Video Solution

21. Vishal wrote the word 'LIGHT' on a paper and placed it in front of a plane mirror (as shown in figure) and noticed how the letters of the word appear in the mirror. Write down what he noticed in the mirror.



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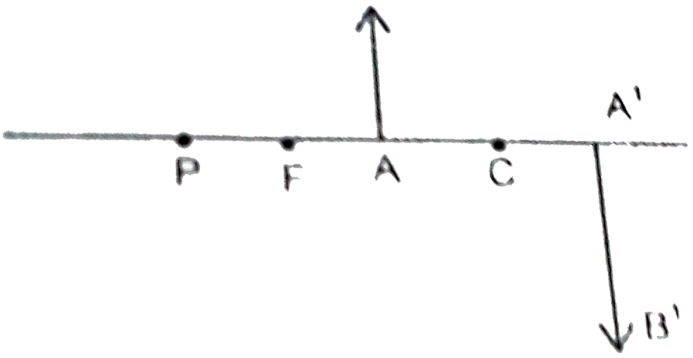
22. In the figure, AB is an object and A'B' is the image formed when a spherical mirror is placed at point P. Identify the type of mirror and describe the nature of image. (Where F and C are focus and centre of curature of the mirror)



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23. A bus driver is observing the image of a car in his rear view (side) mirror. How does the size of the image change when the car approaches the bus?

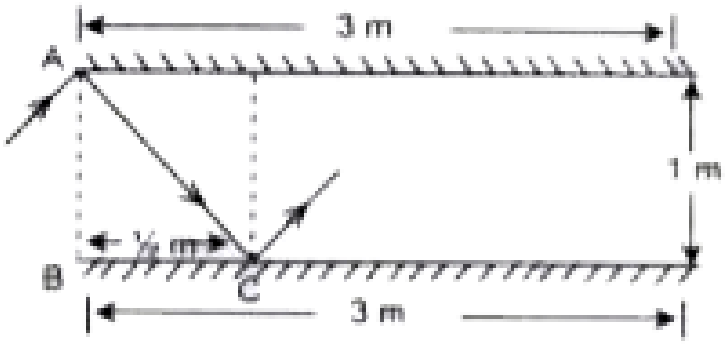
Watch Video Solution

24. When the physis teacher has given a task to determine the focal length of a concave mirror a clever boy in the class focussed the mirror to a distant object. He moved the screen in fornt of the mirror and caught a real image on a screen at a distance of 20 cm from the mirror and he determined the focal length. Where should the object be place so that the object and the image are formed at the same position?

Watch Video Solution

25. Two plane mirrors are inclined at an angle θ . A light ray incident on one of the mirrors undergoes multiple reflections. The angle of incidence on the first mirror is 15° . After reflection from the second mirror, if the

light ray retraces its path, determine the value of θ.



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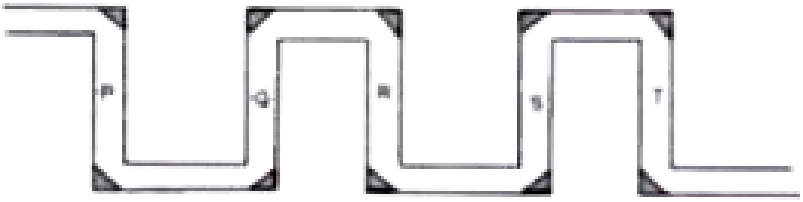
26. Two identical mirrors are placed in a hollow cylindrical tube as show in the figure. A light ray incident on one of the mirrors undergoes multiple reflections. In the length of each mirror is 3 m, and the velocity of light is $3 \times 10^8 ms^{-1}$, then find the time raken by the light ray incident on the mirror to come out of the bollow cylinder.

Watch Video Solution

27. A student constructed a periscope by joining different periscopes P, Q, R, S and T as shown in the figure. Then,

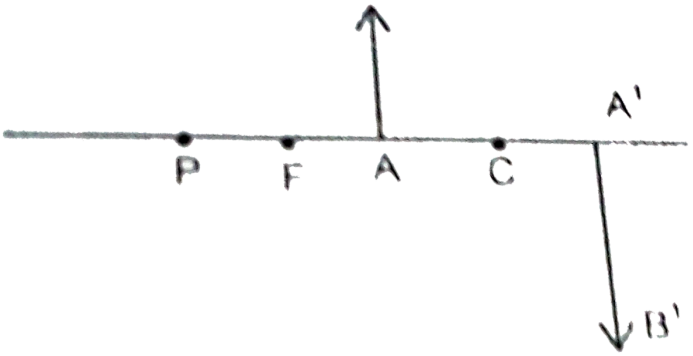
(i) how many times does the incident light ray undergo reflection. (ii) when he observes the image of an object using only one periscope what kind of variation can be observed in the image, when compared with the image formed by the periscope shown in the figure?



Watch Video Solution

28. In the figure, AB is an object and A'B' is the image formed when a spherical mirror is placed at point P. Identify the type of mirror and describe the nature of image. (Where F and C are focus and centre of

curature of the mirror)



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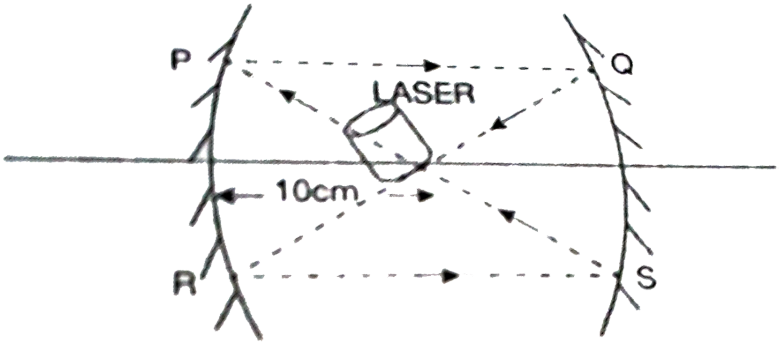
29. A LASER source placed between two concave mirrors sends light rays as shown in the figure. If PQ and RS are parallel to the principal axis, determine the focal lengths and radius of curvatures of both the mirrors.



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Assessment Test Test 1 Select The Correct Alternative

1. A light ray incidents at an angle 'i' on a plane mirror and undergoes reflection. Arrange the following steps in sequential order to calculate the angle of deviation of the light ray.

(A) The angle between the incident ray and the extended light ray is 180°

(B) In case of reflection, the angle of incidence (i) is equal to the angle of reflection (r). Then, the angle between the incident ray and the reflected ray is 2i. (C) Draw an imaginary line, extending the incident light ray, which represents the actual path of the light ray. (D) The angle of deviation is the angle between the reflected light ray and the actual path of the light ray, i.e., $180^\circ - 2i$

A. BADC

B. BCAD

C. BACD

D. CBDA

Answer: B

View Text Solution

2. Arrange the following steps about the working of a periscope in sequential order.

(A) The reflected light from the first mirror incidents on the second mirror with an angle of 45° to the normal and rotates by 90° . (B) A reflecting periscope consists of a tube bent twice at right angles. Two plane mirrors are provided at the bends with an angle of 45° with the frame of the tube. (C) The reflected light from the second mirror comes out of the tube and enters the eye and causes the sensation of vision. (D) The light rays from the object enter the periscope from the upper tube and are incident on the first mirror with an angle of incidence as 45°

A. BDAC

B. BCAD

C. BADC

D. ABCD

Answer: A

View Text Solution

3. The line joining the centre of curvature and pole of the mirror is called. _____.

A. the principal axis

B. y-axis

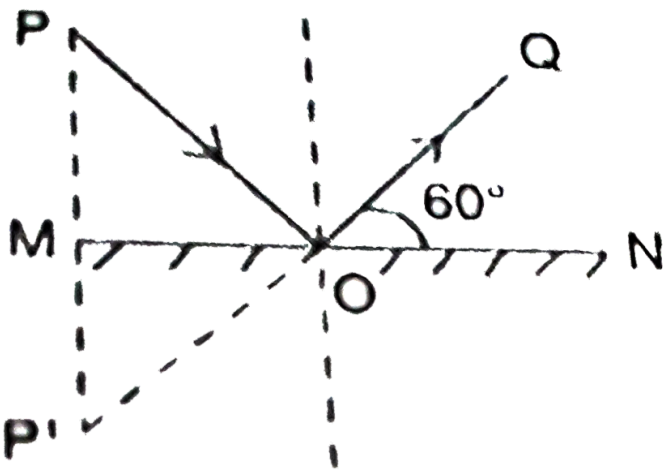
C. the centre axis

D. None of these

Answer: A

Watch Video Solution

4. A light ray from an object 'P' is reflected from a mirror as shown in the figure, then



A. angle of incidence is

B. $PM = MP^1$

C. $\angle PON = 120^\circ$

D. All of the above

Answer: D

Watch Video Solution

5. The angle of incident of a light rays incidents on the surface of a plane mirror is 30° . The angle of deviation is

A. 120°

B. 30°

C. 60°

D. 90°

Answer: A

Watch Video Solution

6. An objcet is placed between two mirrors which make an angle of 45° with each other, then the number of images formed are ____.

A. 8

B. 7

C. 2

D. infinite

Answer: B

Watch Video Solution

7. Choose the correct statement(s) from the following.

A. In a glow-worm the energy produced during a chemical reaction in its body is released in the form of light only.

B. An electric bulb glows, when the filament attains very high temperature due to the passage of current.

C. Due to the powerful reactions taking place in the sun, the energy produced by the sun consists of light and heat.

D. All of the above

Answer: D

Watch Video Solution

8. The image distance in case of a convex mirror can be

A. greater than focal length

B. less than focal length

C. equal to focal length

D. Both (b) and (c)

Answer: D

Watch Video Solution

9. Read the following statements and choose the correct option.

(A) Onlly a point source forms a complete umbra.

(B) An extended source forms a complete umbra and penumbra.

A. Only A is true

B. Only B is true

C. Both A and B are true

D. Both A and B are false

Answer: C

Watch Video Solution

10. Assertion (A): Convex mirrors are used as rear view mirrors in vehicles.

Reason:(R) : The field ivew of convex mirror is maximum and they form diminished images.

A. Both A and R are correct and R is the correct explanation of A

B. Both A and R are correct but R is not the correct explanation of A.

C. A is correct and R is incorrect.

D. Both A and R are incorrect.

Answer: A

Watch Video Solution

11. Assertion (A): A rianbow is formed when white light is inicdent on raindrops.

Reason (R): White light contains seven colours and it undergoes dispersion inside a raindrop.

A. Both A and R are correct and R is the correct explanation of A

B. Both A and R are correct but R is not the correct explanation of A.

C. A is correct and R is incorrect.

D. Both A and R are incorrect.

Answer: A

Watch Video Solution

12. The light rays from a point object placed at the focus of a concave mirror, after reflection

A. emerge perpendicular to the principal axis.

B. emerge parallel to the principal axis.

C. form real image.

D. Both (b) and (c)

Answer: D

Watch Video Solution

13. Read the following statements and choose the correct option.

Planets are not luminous bodies.

The sun is the nearest star to us from which the earth recives most of the light.

A. Only A is true

B. Only B is true

C. Both A and B are true

D. Both A and B are false

Answer: C

Watch Video Solution

14. Which of the following is (are) natural source(s) of light?

A. Planets

B. Glow-worm

C. Stars

D. Both (b) and (c)

Answer: D

Watch Video Solution

15. Match the following

Column A			Column B	
(A)	Laterally inverted image	( )	(a)	Convex mirror
(B)	Light rays emitted from a candle	( )	(b)	Parallel beam of light rays
(C)	Concave mirror	( )	(c)	Convergent light rays
(D)	Reflected light rays from a concave mirror, when the object is at the centre of curvature of the mirror	( )	(d)	Plane mirror
			(e)	Inverted and real image
			(f)	Divergent light rays

Watch Video Solution

Assessment Test Test 2 Select The Correct Alternative

1. A ray of light is incident on a plane mirror, making an angle 'q' with the surface of the mirror. Arrange the following steps in sequential order to calculate the angle between the incident light ray and the reflected light ray.

(A) Draw a normal line on the plane mirror at the point of incidence of the light ray.

(B) Note down the angle between the plane mirror and the incident light ray.

(C) The sum of the angle of incidence and the angle between the plane mirror and the incident ray is 90°.Determine the angle of incidence.

(D) From the laws of reflection, the angle of incidence is equal to the angle of reflection. Then the sum of the angle of incidence and the angle of reflection gives the angle between the incident light ray and the reflected light ray.

A. DACB

B. CDAB

C. BACD

D. DBAC

Answer: C

Watch Video Solution

2. Write the following steps in sequential order to determine nature of the image formed by a concave mirror where an object is placed at the centre of curvature with the help of a ray diagram.

(A) Mark the position of the object infornt of the mirror at the centre of curvature.

(B) Draw a diagram, which represents a concave mirror.

(C) Draw two lines one passing through F and another line parallel to the principal axis and draw the path of the reflected rays.

(D) Draw the principal axis and mark the centre of curvature and principal focus.

(E) Mark the position of the image and study its nature.

A. CADBE

B. ECBAD

C. CBAED

D. CEABD

Answer: D

Watch Video Solution

3. The length of the straight line joining the centre of curvature and any point on the surface of a spherical mirror is the _____ of the mirror.

A. focal length

B. principal axis

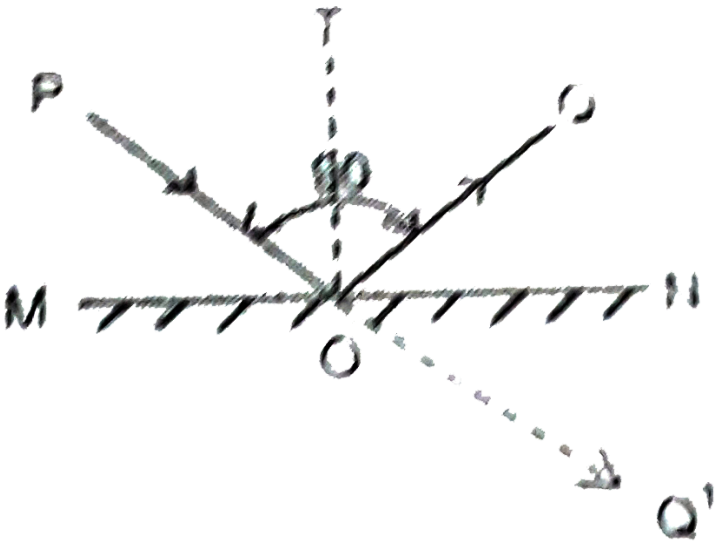
C. radius of curvature

D. optic axis

Answer: C

Watch Video Solution

4. If a light ray is reflected from a mirror as shown in the figure, then



A. the glancing angle of light ray is 45°

B. the reflected light ray is perpendicular to the incident light ray.

C. the incident ray is deviated through an angle of 90°

D. All of the above

Answer: D

Watch Video Solution

5. The angle of deviation of a light ray reflected by a plane mirror is 150°. The angle of reflection is ____.

A. 30°

B. 60°

C. 15°

D. 10°

Answer: C

Watch Video Solution

6. The number of image of an object placed between two plane parallel mirrors is ____

A. two

B. one

C. infinite

D. Cannot be determined

Answer: C

Watch Video Solution

7. Choose the correct statement from the following.

A. Light is the only form of energy which causes the sensation of vision.

B. The sensation of heat is due to the presence of infrared radiation.

C. Light travels in a straight line.

D. All of the above

Answer: D

Watch Video Solution

8. The image distance of an object which is placed at an infinite distance is equal to

A. the radius of curvature of the spherical mirror.

B. the focal length of the spherical mirror.

C. infinity, in case of plane mirror.

D. Both (b) and (c)

Answer: D

Watch Video Solution

9. Read the following statements and choose the correct option.

(A) Shadows are formed due to rectilinear propagation of lght.

(B) When the position of the earth is between sun and moon, lunar eclipse is formed.

A. Only A is true

B. Only B is true

C. Both A and B are true

D. Both A and B are false

Answer: C

Watch Video Solution

10. Assertion (A): A convex mirror always forms a diminished and virtual image.

Reason (R): The laws of reflection are not applicable in the case of shpherical mirrors.

A. Both A and R are correct and R is the correct explanation of A

B. Both A and R are correct but R is not the correct explanation of A.

C. A is correct and R is incorrect.

D. Both A and R are incorrect.

Answer: C

Watch Video Solution

11. Assertion (A): Photosynthesis takes place only during the day.

Reason: (R): Light energy is required for the process of photosynthesis.

A. Both A and R are correct and R is the correct explanation of A

B. Both A and R are correct but R is not the correct explanation of A.

C. A is correct and R is incorrect.

D. Both A and R are incorrect.

Answer: A

Watch Video Solution

12. A light ray is incident along the principal axis of a mirror after reflection _____.

A. retraces its path

B. passes through centre of curvature

C. makes zero angle with the normal

D. All the above

Answer: D

Watch Video Solution

13. Read the following statements and choose the correct option.

(A) Moon is a luminous source of light.

(B) A glow worm is a natural source of light.

A. Only A is true

B. Only B is true

C. Both A and B are true

D. Both A and B are false

Answer: B

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14. Which of the following is (are) man made source(s) of light?

A. Incandescent lamp.

B. Fluorescent lamp.

C. Hurricane lamp.

D. All of the above

Answer: D

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15. Match the following

	Column A			Column B
(P)	When a light ray incidents normally on a plane mirror, the angle of deviation is	( )	(p)	New moon day
(Q)	Chlorophyll	( )	(q)	120°
(R)	Solar eclipse	( )	(r)	Green colour
(S)	Lunar eclipse	( )	(s)	180°
(T)	When a light ray incidents with an angle of incidence as 30° on a plane mirror, the angle of deviation is	( )	(t)	Full moon night
			(u)	White colour

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