



PHYSICS

BOOKS - PEARSON IIT JEE FOUNDATION

LIGHT

Example

- 1. Give any two examples for the following terms.
- (a) Homogenous opaque medium
- (b) Heterogeneous transparent medium
- (c) Homogeneous transparent medium
- (d) Heterogeneous translucent medium

2. How many Lumens make 37.68 candle power?

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3. Differentiate between homogeneous and heterogeneous mixtures with

examples.

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4. When two mirroes are inclined at an angle of 60° with each other, find the glancing angles and angle of deviations at both the mirrors if the angle of incidence of a light ray is $45^{\,\circ}\,$. Draw its ray diagram.



5. If the angle made by a light by plain of a plane mirror is 25° , then find the angle of reflection.



6. Vinay wrote the word 'REFLECTION' 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 the mirrow image of it.





- 8. Give any two examples for the following terms.
- (a) Homogenous opaque medium
- (b) Heterogeneous transparent medium
- (c) Homogeneous transparent medium
- (d) Heterogeneous translucent medium

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9. How many Lumens make 37.68 candle power?

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10. Differentiate between homogeneous and heterogeneous mixtures with examples.

11. When two mirrors are included at an angle of 60° with each other, find the glancing angles and angle of deviations at both the mirrors if the angle of incidence of a light ray is 45° . Draw its ray diagram.



12. If the angle made by a light by plane of a plane of a plabe mirror is

 $25\,^\circ$, then find the angle of reflection.



13. Vinay wrote the word 'REFLECTION' 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 the mirrow image of it.

REFLECTION

14. Find the value of x in the adjoining figure.



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Very Short Answer Type Questions

1._____ is a self-luminous body.



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7. 1 foot candle = Lux.
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8. is a transparent heterogeneous medium.
Watch Video Solution
9. is a transparent homogeneous medium.
Watch Video Solution
10. is a translucent material.
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11. A converging beam of light forms image.
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12. A diverging beam of light forms image.
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13. The size of image obtained by pinhole camera depends on of camera.
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14. The nature of image obtained in pinhole camera is
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Select The Correct Alternative From The Given Options

1. Choose the biggest souce of light from the following .

A. Star

B. Earth

C. Moon

D. Glow-worm

Answer: A

2. Pick out the object that obstructs light.

A. Ground glass

B. Glass

C. Water

D. Cloud

Answer: D

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3. Find the odd one from the following.

A. Air

B. Oiled paper

C. Glass

D. Water

Answer: B



4. Choose the incorrect one form the following in case of a pinhole camera .

A. It works on the principle of rectilinear propagation of light

B. If the size of hole is decreased, then the image formed is more clear.

C. If the size of hole is increased, then the image becomes blurred due

to supper-position of light.

D. Pinhole camera is also known as camera obscure (dark chamber).

Answer: B

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5. Choose the correct one from the following.

A. Lunar eclipse occurs on full moon day.

B. Solar eclipse occurs on new moon day.

C. Umbra and penumbra are casted by an opaque object under the

exposure of extended source of light.

D. All of the above

Answer: D

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6. If angle fo incidence of a light ray on a plane mirror is $30^{\,\circ}\,$, then

A. The angle of reflection is 30°

B. The glancing angle of incidence is 60°

C. The angle of deviation is 120°

D. All of these

Answer: D



7. Choose the incorrect one from the following .

A. Periscope forms a real image for a real object.

B. Periscope form a virtual image for a real object

C. Object distance equals to image distance for a plane mirror

D. Both (b) and (c)

Answer: A

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8. The number of images formed by two plane mirrors inclined at 60° of an object placed symmetrically between mirror is

A. 6

B. 36

C. 5

D. 4

Answer: C

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9. If the object is placed at a distance of 10 cm from a plane mirror, then

the image distance is _____.

A. 20 cm

B. 5 cm

C. 10 mm

D. 10 cm

Answer: D

10. Which of the following letters does not show lateral inversion in a plane mirror ?

A. E B. I C. P D. G

Answer: B

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11. In a reflecting periscope , if a light ray is incident at 45° angle at the first plane mirror, then the angle of deviation of light ray by the periscope

is _____ .

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

B. 90°

C. 180°
D. zero
Answer: D
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1. Laws of reflection are applicable for _____.

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Fill In The Blanks

2. Angle of deviation means _____ .

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3. Angle of incidence means _____.

Watch Video Solution
4. Angle of reflection means
Vatch Video Solution
5. Glancing angle of incidence means • • • • • • • • • •
6. Glancing angle and angle of incidence are angle.
Watch Video Solution
7. A plane mirror forms image.
Watch Video Solution

8. When the two plane mirror are parallel to each other, then the number

of images of an object placed between them is

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9. During reflection of light, and remains constant but
changes.
Watch Video Solution
10. The formula for angle of deviation, d=
Watch Video Solution
11. When two plane mirrors are at the angle $' heta'$ with each other, the
number of images formed are (formula) for odd number of image,
for even number of images.

V Watch Video Solution
12. When two plane mirrors are at right angle with each other, the
number of image viewed is
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13. invented the periscope .
O Watch Video Solution
14. Reflection periscopes can be constructed by mirrors.
Watch Video Solution
15. phenomenon is used in a reflecting periscope.
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1. What is an optical medium ? Explain the types in it with two examples

based on the amount of light they allow through them.

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2. Pinhole camera

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3. Explain the types of eclipse.



4. Assertion: Point sources form only umbra.

Reason : Umbra is formed due to the rectilinear propagation of light.

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

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

C. A is false and R is true.

D. Both A and R are false.

Answer: A

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5. Match the entries of Column with those of Column B

	Column A			Column B
(A)	Mercury	()	(a)	Optical properties same throughout
(B)	Firefly	0	(b)	Optically opaque
	Column A			Column B
(C)	Parallel beam	()	(c)	The angle between light rays is zero
(D)	Homogeneous	()	(d)	Source of light





13. Give the characteristics of image formed by a plane mirror.

14. Distinguish between real and virtual image with an example.

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15. List out the letters of the alphabet that do not show lateral inversion

when viewed through a plane mirror.

16. Match the following .

(A)	Column A A plane mirror	()	(a)	Column B Number of images formed
(B)	Principle used in a periscope	()	(b)	= 3 Reflection of light
(C)	During reflection	()	(c)	Shows lateral inversion
(D)	If $\theta = 90^{\circ}$ between two plane mirrors, then	()	(d)	Intensity changes

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17. Why is the plane mirror inclined at $45^{\,\circ}$ in a periscope ?



18. Assertion: A plane mirror can form a real and inverted image.

Reason : A virtual image is always formed behing the plane mirror.

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

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

C. A is false and R is true.

D. A is true and R is false

Answer: C

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19. Two plane mirrors are arranged perpendicular to each other . If a light ray is incident at 30° on one of the plane mirrors of above arrangement ,

then find

(a) Angle of reflection at the second plane mirror.

(b) Angle of deviation at both the mirrors.

(c) Number of images that we can observe when one plane mirror is

rotated by $30^{\,\circ}$ towards the other.



20. A cockroach is flying towards a plane mirror in perpendicular direction with a velocity of 4 mm s^1 . Find the speed of its image in the mirror and also find out the angle of incidence , angle of reflection and angle of deviation.

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21. Gopi and Bhasker arranged a pair of mirrors at an angle of 120° and 30° , respectively. Who will observe more number of images, when an object is viewed through the mirrors at symmetric position?

Concept Application

1. A light ray is incident on a plane mirror making an angle of 90° with the mirror's surface. The angle of reflection of the light is _____ .

2. Ashoke and Ravi stood before a plane mirror at a distance of 3 m from it. Ashok walked 5 steps towards the mirror, each step measuring 30 cm. Ravi walked 8 steps away from the mirror, each step measuring 25 cm. The distance between Ravi and the image of Ashoke in the mirror is m.

A. 5.5 m

B. 4.5 m

C. 7.5 m

D. 6.5 m

Answer: D



3. A light ray is incident on a smooth reflecting surface making an angle of incidence 2i. If the angle of incidence is doubled, then the deviation of

the light ray is equal to _____ .

A. 90-40i

B. 90-2i

C. 2i

D. 180-8i

Answer: D

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4. Two plane mirrors M and M' are arranged such that their reflecting surfaces face towards a common object placed between them and kaming an angle of 72° with each other . The number of images of the object placed between the reflecting surfaces of the mirrors is _____ .

A. 3

B. 6

C. 5

Answer: C



5. A tall person 'A' and a short person 'B' stood before a plane mirror. 'A' stands 1.25 metres behind 'B' . If the distance between 'B' and the plane mirror is 50 cm , then the distance between 'A' and his image in the mirror

is _____ .

A. 4 cm

B. 3.5 cm

C. 4.5 cm

D. 3.75 cm

Answer: B

6. A light ray is incident on a plane mirror making an angle of 90° with the mirror's surface. The angle of reflection of the light is _____ .



7. Ashoke and Ravi stood before a plane mirror at a distance of 3 m from it. Ashok walked 5 steps towards the mirror, each step measuring 30 cm. Ravi walked 8 steps away from the mirror, each step measuring 25 cm. The distance between Ravi and the image of Ashoke in the mirror is _____ m.

A. 5.5 m

 $\mathsf{B.}\,4.5\,\mathsf{m}$

C. 7.5m

D. 6.5 m

Answer: D

8. A light ray is incident on a smooth reflecting surface making an angle of incidence 2i. If the angle of incidence is doubled, then the deviation of the light ray is equal to

A. 90 - 4iB. 90 - 2iC. 2i

 $\mathsf{D.}\,180-8i$

Answer: D

Watch Video Solution

9. Two plane mirrors M and M' are arranged such that their reflecting surfaces face towards a common object placed between them and kaming an angle of 72° with each other . The number of images of the object placed between the reflecting surfaces of the mirrors is _____.

A. 3		
B. 6		
C. 5		
D. 8		

Answer: C



10. A tall person 'A' and a short person 'B' stood before a plane mirror. 'A' stands 1.25 metres behind 'B' . If the distance between 'B' and the plane mirror is 50 cm , then the distance between 'A' and his image in the mirror

is _____ .

A. 4 cm

 $\mathrm{B.}\,3.5\,\mathrm{cm}$

 $\mathrm{C.}\,4.5\,\mathrm{cm}$

D. 3.75 cm

Answer: B



Assessment Test

- 1. Draw the diagrams of
- (a) Ray of light
- (b) Convergent beam of light
- (c) Divergent beam of light
- (d) Parallel beam of light

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2. Write the conditions to form a shadow.

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

of light.

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4. According to Newton's theory of light the rectilinear propagation of

light is due to

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5. Draw the ray diagram of a plane mirror that shows the image formation by an extended real object.



6. What is lateral inversion ?

7. What are the applications of reflection of light ?

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8. Write the uses of plane mirror in our daily life.
Watch Video Solution
9. What is meant by lateral inversion ?
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10. Moon appears bright at night. Is it a luminous or non-luminous body ?
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11. Classify the objects as opaque transparent and translucent :

Fog, glass, wood, plastic box, smoke, water

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12. Why we cannot see our image in the mirror in complete dark room ?
Vatch Video Solution
13. What is Umbra ?
Vatch Video Solution
14. What is an incandesncent body ? Given example.
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15. How will you convert a glass sheet into a translucent sheet ?



- 16. Draw the diagrams of
- (a) Ray of light
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Watch Video Solution

17. Write the conditions to form a shadow.



18. List out the difference between a point source and an extended source

of light.

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Watch Video Solution	

19. Mention in brief the applications and natural occurrences of rectilinear propagation of light .

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20. Draw the ray diagram of a plane mirror that shows the image formation by an extended real object.



21. What is lateral inversion ?

22. What are the applications of reflection of light ?

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23. Write the uses of plane mirror in our daily life.
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Watch Video Solution
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Vatch Video Solution
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Vatch Video Solution
29. What is an incandesncent body ? Given example.
Vatch Video Solution

30. How will you convert a glass into a translucent sheet ?



Across

- 4. Infinite number of images in formed when two plane mirrors placed
- 5. Magnification of cancave mirror when the object is placed at the centre
- 7. Example of hot source of light
- 9. Convex mirror can form this image
- 10. Number of images formed when an object placed between two plane m
- 11. Image formed due to convergence of light

Test Your Concepts Very Short Answer Questions

1. _____ is a self-luminous body.

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2._____ is an example for a cold source of light.

Watch Video Solution

3. _____ gives light from its bio - chemical energy .



4. Optical medium means _____ .



9. is a transparent homogeneous medium.
Watch Video Solution
10. is a translucent material.
Watch Video Solution
11. A converging beam of light forms image.
Watch Video Solution
12. A diverging beam of light forms image.
O Watch Video Solution

13. The size of image obtained by pinhole camera depends on of
camera .
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14. The nature of image obtained in pinhole camera is
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15. Occurrence of eclipse and formation of shadows are due to
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16. Choose the biggest souce of light from the following .
A. Star

B. Earth

C. Moon

D. Glow -worm

Answer: A

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17. Pick out the object that obstructs light.

A. Ground glass

B. Glass

C. Water

D. Cloud

Answer: D

18. Find the odd one out from the following .

A. Air

B. Oiled paper

C. Glass

D. Water

Answer: B

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19. Choose the incorrect one form the following in case of a pinhole camera .

A. It works on the principle of rectilinear propagation of light .s

B. If the size of hole is decreased , then the image formed is blurred.

C. If the size of hole is increased , then the image becomes blurred

due to super - position of light .

D. Pinhole camera is also known as camera obsure (dark chamber).

Answer: B

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Test Your Concepts Fill In The Blanks

1. Choose the correct one from the following .

A. Lunar eclipse occurs on full moon day .

B. Solar eclipse occurs on new mood day .

C. Umbra and penumbra are casted by an opaque object under the

exposure of extended source of light .

D. All the above .

Answer: D

2. Laws of reflection are applicable for
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3. Angle of deviation means
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4. Angle of incidence means
Watch Video Solution
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Watch Video Solution

6. Glancing angle of incidence means
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12. When two plane mirrors are at the angle $' heta'$ with each other, the
number of images formed are (formula) for odd number of image,
for even number of images.
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13. When two plane mirrors are at right angle with each other, the
number of image viewed is



B. The glancing angle of incidence is 60°

C. The angle of deviation is 120°

D. All of these

Answer: D

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18. Choose the incorrect one from the following .

A. Periscope forms a real image for a real object .

B. Periscope form a cirtual image for a real object .

C. Object distance equals to image distance for a plane mirror .

D. Both (b) and (c)

Answer: A

19. The total number of images formed by two mirrors inclined at 120° to

each other is _____.

A. 6

B. 36

C. 5

D. 4

Answer: C

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20. If the object is placed at a distance of 10 cm from a plane mirror, then

the image distance is _____ .

A. 20 cm

B. 5 cm

C. 10 mm

D. 10 cm

Answer: D



21. Which of the following letters does not show lateral inversion in a plane mirror ?

A. E B. 1 C. P

D. G

Answer: B

22. In a reflecting periscope , if a light ray is incident at 45° angle at the first plane mirror, then the angle of deviation of light ray by the periscope

A. 30°

is .

B. 90°

C. 180°

D. zero

Answer: D

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Test Your Concepts Short Answer Type Questions

1. What is an optical medium ? Explain the types in it with two examples

based on the amount of light they allow through them.



4. Assertion : Point sources form only camera .

Reason : Umbra is formed due to the rectilinear propagation of light .

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

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

C. A is false and R is true .

D. Both A and R are false .

Answer: A



5. Match the entries of Column with those of Column B

	Column A			Column B
(A)	Mercury	()	(a)	Optical properties same throughout
(B)	Firefly	0	(b)	Optically opaque
	Column A			Column B
(C)	Parallel beam	()	(c)	The angle between light rays is zero
			and an eine east	and a second second second second

6. Distinguish between shadow and image.

7. What are the factors in which the image obtained by the pinhole
camera depend ?
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8. Explain how an opaque paper can be made translucent.
Vatch Video Solution
9. Explain the working of hurricane lamp ?
View Text Solution
10. What is a shadow and why the house fly does not cast a shadow on
the ground while flying ?

11. Write the different case of a point and an extended source of light to

cast only umbra for an opaque object.



14. Distinguish between real and virtual image with an example.

15. List out the letters of the alphabet that do not show lateral inversion

when viewed through a plane mirror.



18. Assertion: A plane mirror can form a real and inverted image.

Reason : A virtual image is always formed behing the plane mirror.

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19. Two plane mirrors are arranged perpendicular to each other . If a light ray is incident at $30^\circ\,$ on one of the plane mirrors of above arrangement , then find

(a) Angle of reflection at the second plane mirror.

(b) Angle of deviation at both the mirrors.

(c) Number of images that we can observe when one plane mirror is rotated by 30° towards the other.



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also find out the angle of incidence , angle of reflection and angle of deviation.

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21. Gopi and Bhasker arranged a pair of mirrors at an angle of 120° and 30° , respectively. Who will observe more number of images, when an object is viewed through the mirrors at symmetric position?

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Assessment Test Cross Word

1. Infinite number of images is formed when two plane mirrors placed

2. Mgnification of concave mirror when the object is placed at the centre

of curvature



an object placed symmetrically between mirror is



11. Name the following:

The eclipse that takes place when earth comes between sun and moon