



PHYSICS

BOOKS - SELINA PHYSICS (ENGLISH)

SAMPLE PAPER 3

Questions

1. Choose the correct statement with respect to critical angle

- A. The angle lies in the optically rarer medium
- B. The angle lies in the optically denser medium

C. It leads to refraction of light

D. None of the above

Answer: B



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2. Optical illusion seen in deserts is called as

A. Mirage

B. Looming

C. hallucination

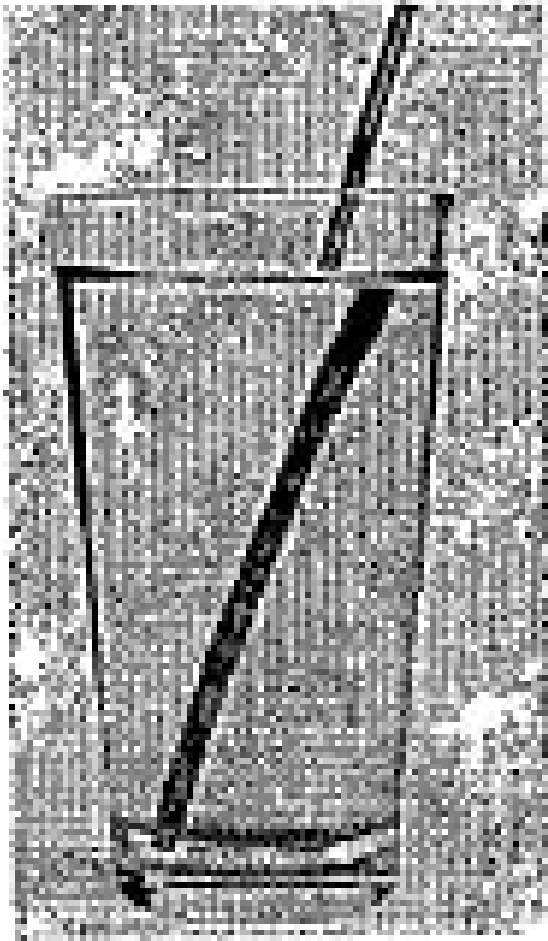
D. dispersion of light

Answer: A



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3. In the diagram below the phenomenon occurring is



A. reflection of light

B. Tyndall's effect

C. Refraction of light

D. total internal reflection

Answer: C



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4. Identify the type of lens used in case of a magnifying glass

A. plano convex

B. Convex

C. plano concave

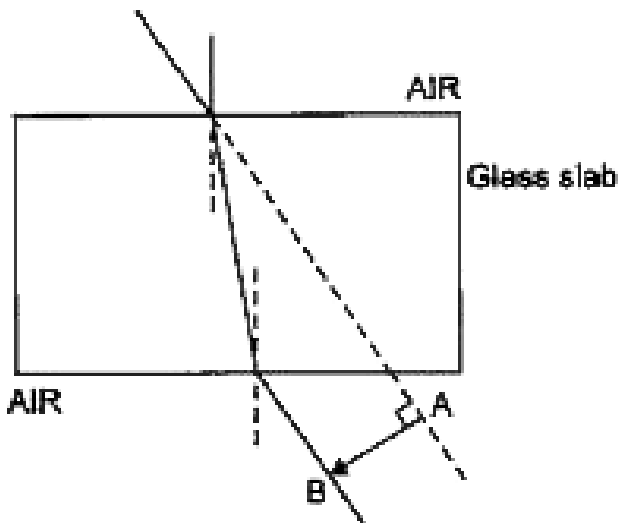
D. concavo convex

Answer: B

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5. A ray of light is incident obliquely on an optical boundary and further suffers successive refractions at various optical boundaries as shown in the figure below.

Compare the refractive indices of medium 1,2 and 3



A. $\mu_1 > \mu_2 > \mu_3$

B. $\mu_1 = \mu_2 = \mu_3$

C. $\mu_1 < \mu_2 < \mu_3$

D. $\mu_1\mu_2 < \mu_3$

Answer: B



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6. The diagram below shows a spherical lens being used in which the image obtained is highly magnified and has a focal length of 25cm. With reference to this answer the following questions:



The spherical lens used is

- A. convex
- B. convexo concave
- C. concave
- D. plano convex

Answer: A



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7. The diagram below shows a spherical lens being used in which the image obtained is highly magnified and has a focal length of 25cm. With reference to this answer the following questions:



The power of lens is

- A. 6.0 D
- B. -6.0 D
- C. $+4.0$ D

D. -4.0 D

Answer: C



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8. The diagram below shows a spherical lens being used in which the image obtained is highly magnified and has a focal length of 25cm . With reference to this answer the following questions:



The image formed is

- A. real and erect
- B. real and inverted
- C. virtual and erect
- D. None of the above

Answer: C

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9. The diagram below shows a spherical lens being used in which the image obtained is highly magnified and has a focal length of 25cm. With reference to this answer the following questions:



If instead of convex lens could a concave lens be used for the same purpose

A. Yes

B. No

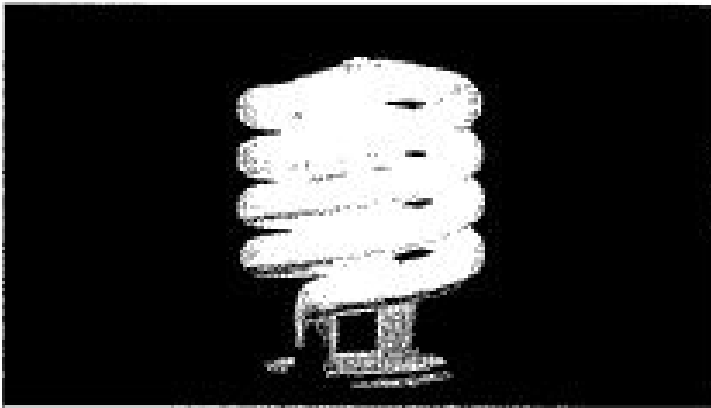
C. Depend on other factors

D. None of these

Answer: B

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10. The major energy change taking place in the following appliance is



A. Electrical to sound energy

B. Electrical to heat energy

C. Electrical to light energy

D. none of the above

Answer: C



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11. 1 N-m is equal to

A. 10^5 dyne cm

B. 0.1 dyne cm

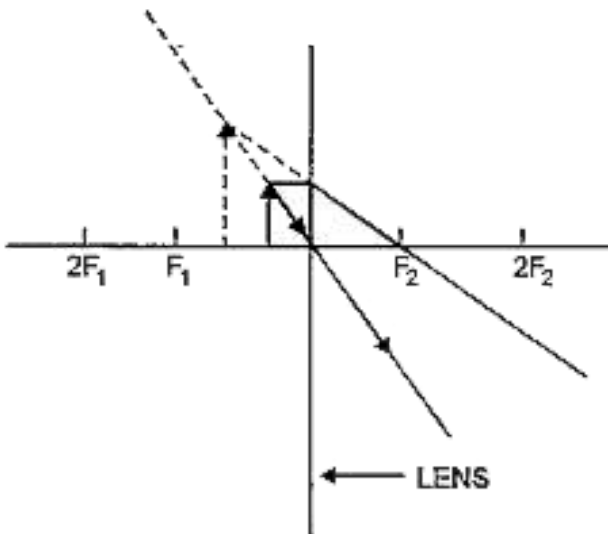
C. 100 dyne cm

D. 10^7 dyne cm

Answer: D

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12. In the following beam in equilibrium?



A. Yes

B. No

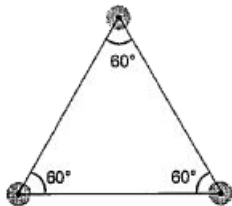
C. Can't say

D. None of the above

Answer: B

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13. Identify in which of the cases Centre of gravity is the geometric centre



A. Triangle

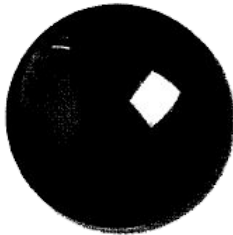
B. Hollow cone



C. Boomerang



D. Solidsphere



Answer: D

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14. Greater the perpendicular distance of point of application of force

A. Larger is the turning moment

B. less is the force required

C. greater is the force required

D. Both 1 and 2

Answer: D



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15. Observe this figure and answer the questions below



Name the ride seen in the amusement park

- A. Giant wheel
- B. wild life circle
- C. Merry go round
- D. Jungle round

Answer: C

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16. Observe this figure and answer the questions below



What type of force is exerted on the kid when it starts moving?

- A. Centripetal force
- B. Centrifugal force
- C. both Centripetal and centrifugal
- D. None of the above

Answer: B



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17. Observe this figure and answer the questions below



The boy tends to move outwards due to

- A. Virtual force
- B. Centrifugal force
- C. Centripetal force
- D. Both 1 and 2

Answer: D

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18. Observe this figure and answer the questions below



The inward seeking force is called as

A. Centripetal force

B. Centrifugal force

C. Real force

D. Virtual force

Answer: A



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19. In an ideal machine

A. Work output = work input

B. power output = power input

C. Mechanical advantage = velocity ratio

D. all of the above

Answer: D

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20. For a practical machine

- A. work output is less than work input
- B. Efficiency of a practical machine is less than one
- C. power output is less than power input
- D. all of the above

Answer: D

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21. Mechanical advantage of pulley systems used in lifts of buildings is

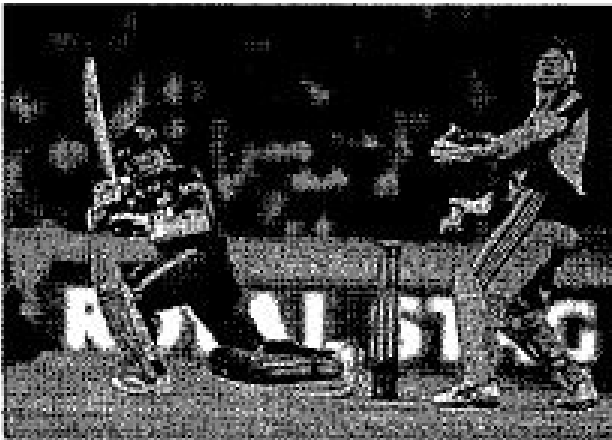
- A. One
- B. Two
- C. Three
- D. None of the above

Answer: B



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22. Sachin Tendulkar starts the innings by batting the very first ball and returns back to the batting end on completion of his run and a blazing double run during the match v/s the world champions Australia. Work done by him is



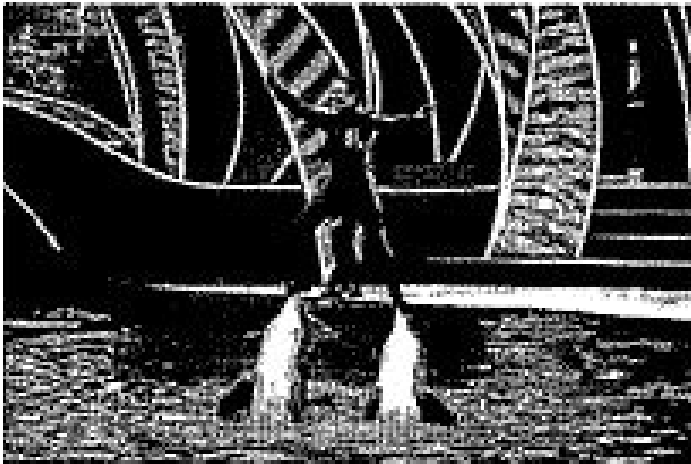
- A. zero J
- B. 10J
- C. 100J

D. 1000J

Answer: A

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23. State the phenomenon applied in the case below in an amusement park



A. Echo

B. repetition of sound

C. reverberation

D. none of the above

Answer: A



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24. A guitarist plucks a string of frequency 512 Hz during an orchestra. If speed of sound in air is 320 m s^{-1} , answer the following questions.

The wavelength of sound produced is:

A. 0.5 m

B. 0.626 m

C. 0.8 m

D. 1.2 m

Answer: B



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25. A guitarist plucks a string of frequency 512 Hz during an orchestra. If speed of sound in air is 320 ms^{-1} , answer the following questions.

Time taken by one vibration is:

A. $[1/512]$ sec

B. 512 sec

C. 320 sec

D. $[1/320]$ sec

Answer: A



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26. A guitarist plucks a string of frequency 512 Hz during an orchestra. If speed of sound in air is 320 ms^{-1} , answer the following questions.

If the same sound was produced in a medium where velocity of sound is: 420 ms^{-1} , its frequency would be

A. 765 Hz

B. 672 Hz

C. 576 Hz

D. 665 Hz

Answer: B



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27. A guitarist plucks a string of frequency 512 Hz during an orchestra. If speed of sound in air is 320 m s^{-1} , answer the following questions.

The corresponding time period in case 3 would be

A. 0.01 s

B. 0.001 s

C. 0.0001 s

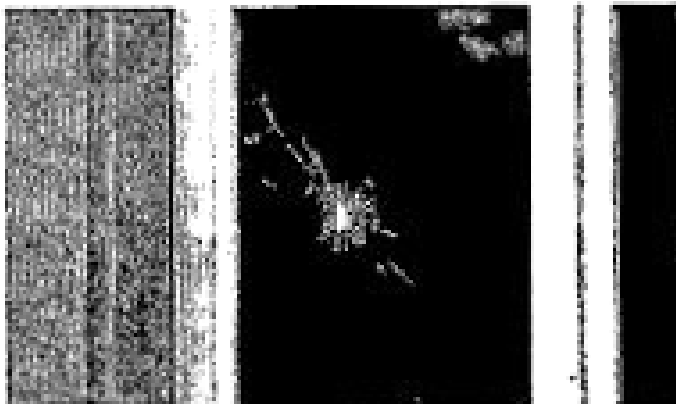
D. 0.1 s

Answer: B

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28. A crack in a window pane appears silvery and shiny.

Choose the correct reason for this occurrence



A. It has a low critical angle

B. Due to total internal reflection

C. Due to total internal reflection followed by successive refraction of light

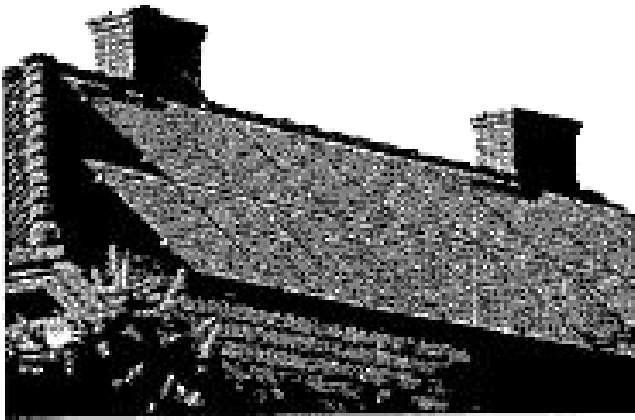
D. Due to diffraction

Answer: B



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29. The energy transformation taking place in appliance shown below is



- A. Light energy to electrical energy
- B. Light energy to chemical to electrical energy
- C. Heat energy to Chemical energy
- D. Thermal energy to light energy

Answer: B

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30. In a water slide Richard having mass of 50 kg is at a height of 10 m above the ground level. Assuming 50% of energy is lost due to water turbulence what turbulence what would be the kinetic energy when he would reach the ground. [$g = 10 \text{ Nkg}^{-1}$]



A. 250J

B. 25J

C. 5000J

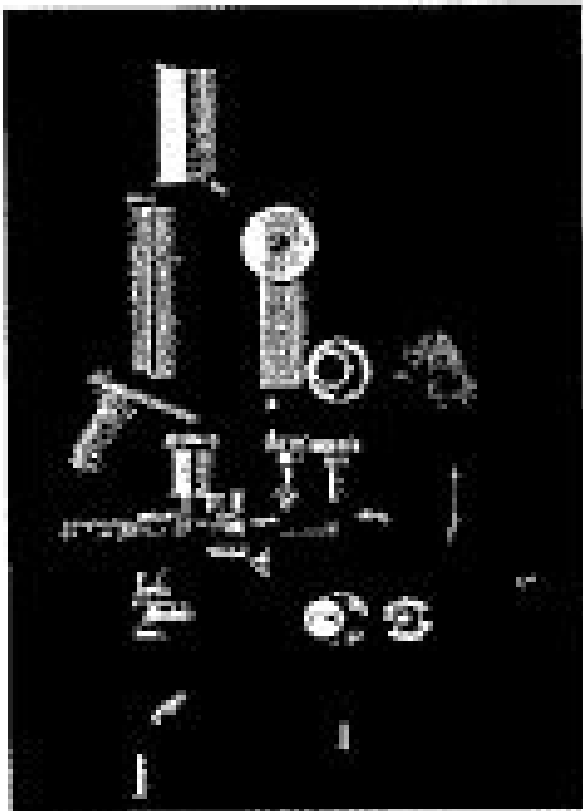
D. 2500J

Answer: D



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31. Name the lens used in the instrument shown below:



A. (i) Convex (ii) Not defined

B. (i) Convex (ii) at Focus

C.

(i) Convex (ii) between Optical centre and focus

D. (i) Convex (ii) at $2F$

Answer: C



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32. State the position of object in the above instrument

A. (i) Convex (ii) Not defined

B. (i) Convex (ii) at Focus

C.

(i) Convex (ii) between Optical centre and focus

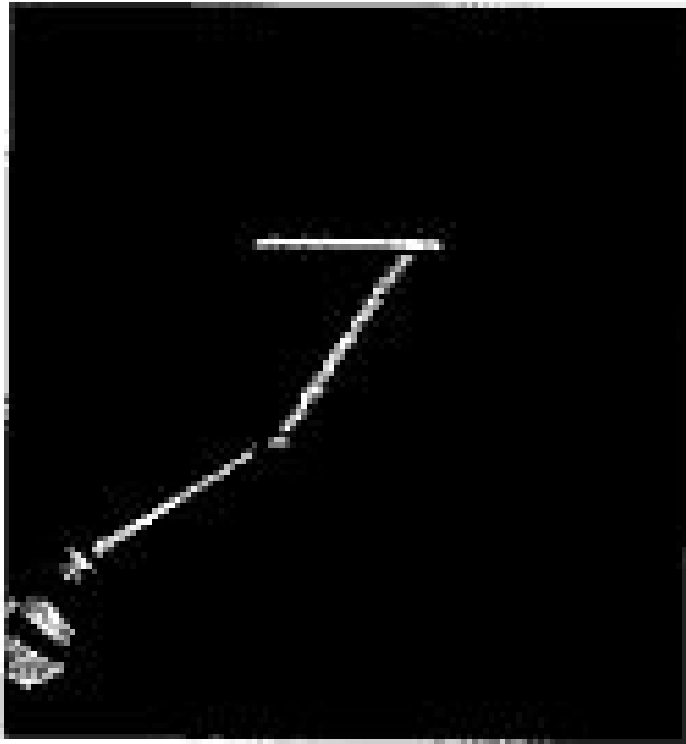
D. (i) Convex (ii) at $2F$

Answer: A::B::C::D



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33. With reference to the experiment shown below answer the following questions



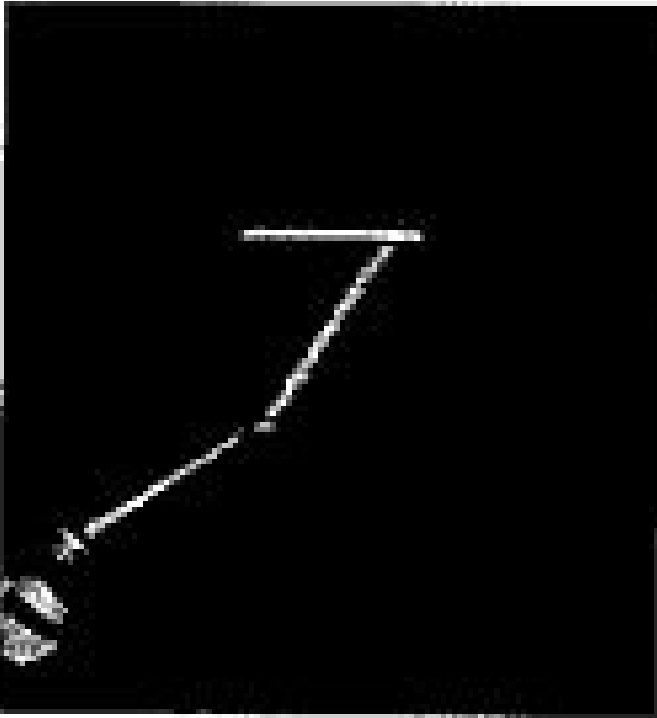
The deviation produced in the ray of light is because of

- A. Refraction of light
- B. Difference in optical densities of the two media
- C. difference in refractive index of the two media
- D. all of the above

Answer: D

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34. With reference to the experiment shown below answer the following questions



The incident ray and emergent ray are

A. perpendicular to each other

B. parallel to each other

C. collinear

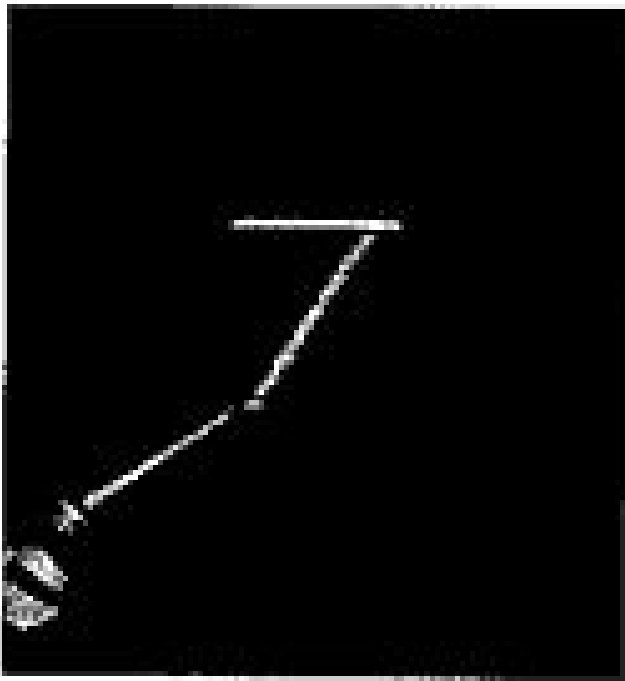
D. none of the above

Answer: B



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35. With reference to the experiment shown below answer the following questions



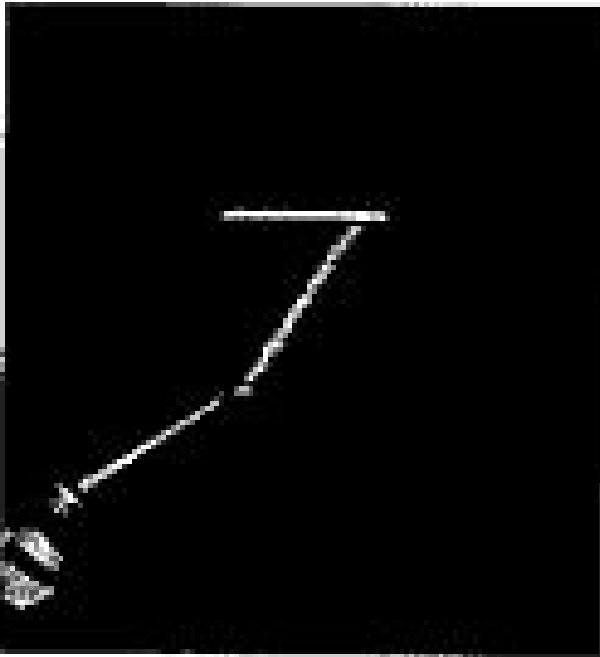
The perpendicular shift between original incident ray produced and the emergent ray is called

- A. lateral displacement
- B. lateral shift
- C. angular shift
- D. angular deviation

Answer: A

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36. With reference to the experiment shown below answer the following questions



The shift mentioned in question 3 is directly proportional to

- A. thickness of glass slab
- B. refractive index of the glass slab
- C. angle of incidence
- D. all of the above

Answer: D



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