PHYSICS

BOOKS - HT Olympiad Previous Year Paper

NSO QUESTION PAPER 2020-21 SET A

Science

1. Which of the following statements is true?

A. The north pole of a magnet attracts south pole of another magnet.

B. Atmospheric pressure is the mass of air in a column of unit area.

C. Pressure = Force/Area of surface, here force acts parallel to the surface on which pressure is to be computed.

D. The electrostatic force comes into play when bodies are in contact only.

Answer: A

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2. Statement 1: A straw rubbed with paper attracts another straw.

Statement 2: Electrostatic force is always defined as the force exerted by a charged body on an uncharged body.

A. Both statements 1 and 2 are true and statement 2 is the correct explanation of statement 1.

B. Both statements 1 and 2 are true but statement 2 is not the correct explanation of statement 1.

C. Statement 1 is true but statement 2 is false.

D. Both statements 1 and 2 are false.

Answer: C

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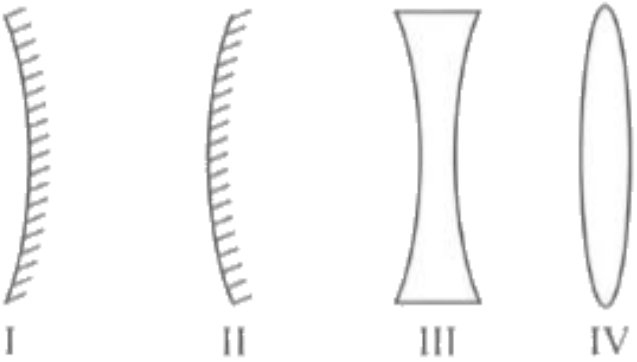
3. Which of the following optical devices can produce real images?



A. I only

B. II only

C. I and IV only

D. II and III only

Answer: C

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4. There are three long planks, each of length 5 meters. Three identical balls are placed on the planks as shown in the figure. Frictional force offered by planks I, II and III on the ball are f_1, f_2 and f_3 respectively.

If same force (push) is given to each ball then time taken to leave the planks I, II and III are 2

minutes, 1 minute and 4 minutes respectively. Which of the following options is correct regarding the friction force offered by the planks on the ball?

A. $f_1 = f_2 = f_3$

B. $f_1 > f_2 = f_3$

C. $f_3 > f_1 > f_2$

D. $f_3 < f_1 < f_2$

Answer: C

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5. Consider the list of terms given below.

(i) Tsunami (iii) Floods .

(ii) Landslide (iv) lightining.

Earthquakes can cause .

A. I only

B. II only

C. I and III only

D. I, II and III

Answer: D

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6. Which of the following statements is/are correct regarding artificial satellites?

I. They revolve around the earth much closer than earth's natural satellite.

II. They are used for weather forecasting, long distance communication and remote sensing.

III. They are not used for telecommunication.

A. I only

B. I and II only

C. II only

D. I, II and III

Answer: B

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7. Statement 1: When an electric current flows through a wire, it behaves like a magnet.

Statement 2: A current carrying coil of an insulated wire wrapped around an iron nail forms an electromagnet.

A. Both statements 1 and 2 are true and statement 2 is the correct explanation of statement 1.

B. Both statements 1 and 2 are true but statement 2 is not the correct explanation of statement 1.

C. Statement 1 is true but statement 2 is false.

D. Both statements 1 and 2 are false.

Answer: B

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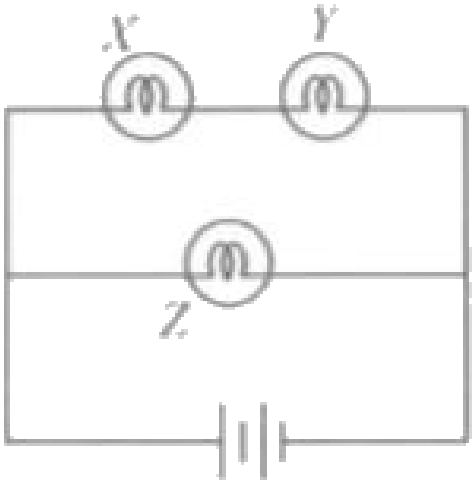
8. Sohan connects three identical bulbs X, Y and Z as shown in the figure. Which of the following statements is correct?



A. If bulb X is fused, then bulbs Y and Z will glow.

B. If bulb Y is fused, then bulb X will glow.

C. If bulb Z is fused, then bulbs X and Y will glow.

D. All the bulbs will glow with equal brightness.

Answer: C

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9. All hot bodies radiate heat. When this heat falls on some other object, a part of it

A. Is absorbed

B. Is reflected

C. Is transmitted

D. May be absorbed / reflected / transmitted

Answer: D

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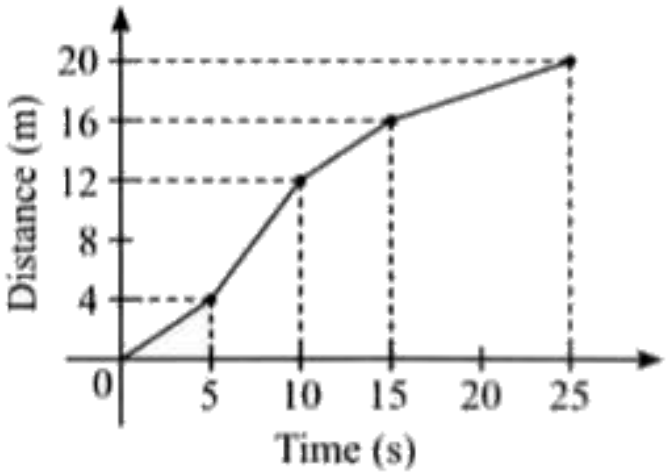
10. The distance-time graph of the motion of a toy car is shown in the figure. Which of the following statements is false for the toy car?



A. Car is moving fastest during the time interval 5 s to 10 s.

B. Average speed of the car is 0.8 m/s.

C. Car is moving with three different speeds during whole journey.

D. Speed of the car at 8s is 0.8 m/s.

Answer: D

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11. Two plane mirrors are inclined at some angle θ. If a ball is placed between the mirrors and there are 9 images formed for the ball, then angle θ may be equal to

A. 45°

B. 60°

C. 36°

D. 90°

Answer: C

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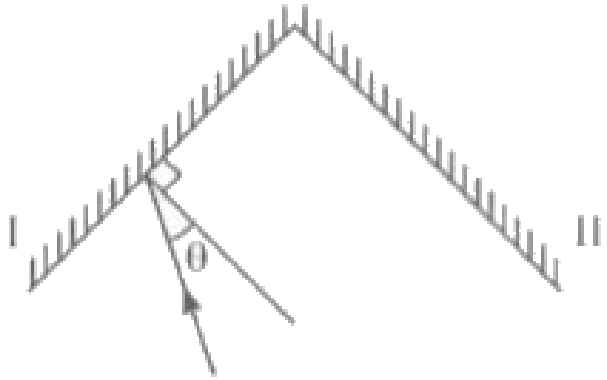
12. Two mirrors I and II are placed at right angle to each other as shown in the figure. A ray of light is incident on mirror I at an angle θ

and then falls on mirror II after reflection. If angle of reflection for the ray reflected from mirror II is 65°, then the value of θ would be



A. 25°

B. 65°

C. 45°

D. 50°

Answer: A

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13. Which of the following shows a pleasant sound?

A. 

B. 

C. 

D. 

Answer: A

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14. If the temperature of an object is $-40^\circ F$, then this temperature on the Celsius scale would be

A. $-40^\circ C$

B. $-50^\circ C$

C. $-30^\circ C$

D. $-72^\circ C$

Answer: A

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15. For the myopic eye, the defect is corrected by

A. Convex lens

B. Concave lens

C. Cylindrical lens

D. Plano convex lens

Answer: B

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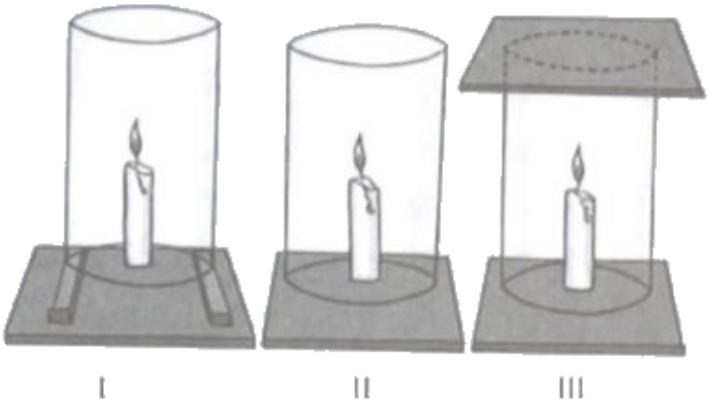
16. Study the given figures carefully.



Select the correct observation.

A. The flame finally goes off in all the three cases.

B. The flame flickers and produces smoke in all three cases.

C. Candle burns freely in I and II and flickers in III.

D. Candle burns freely in I.

Answer: D

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17. Fill in the blanks by choosing an appropriate option.

An LED may be used in place of the electric bulb in the tester. LED glows even when a (i)___ electric current flows through it. There are two wires (called leads) attached to an LED. One lead is (ii)___ than other. When an LED is connected to a circuit, longer lead is always connected to the (iii)___ terminal of the battery and the shorter lead is connected to

the (iv)____ terminal of the battery.

	(i)	(ii)	(iii)	(iv)
A.	Strong	Shorter	Negative	Positive
B.	Weak	Longer	Positive	Negative
C.	Weak	Shorter	Negative	Positive
D.	Strong	Longer	Positive	Negative

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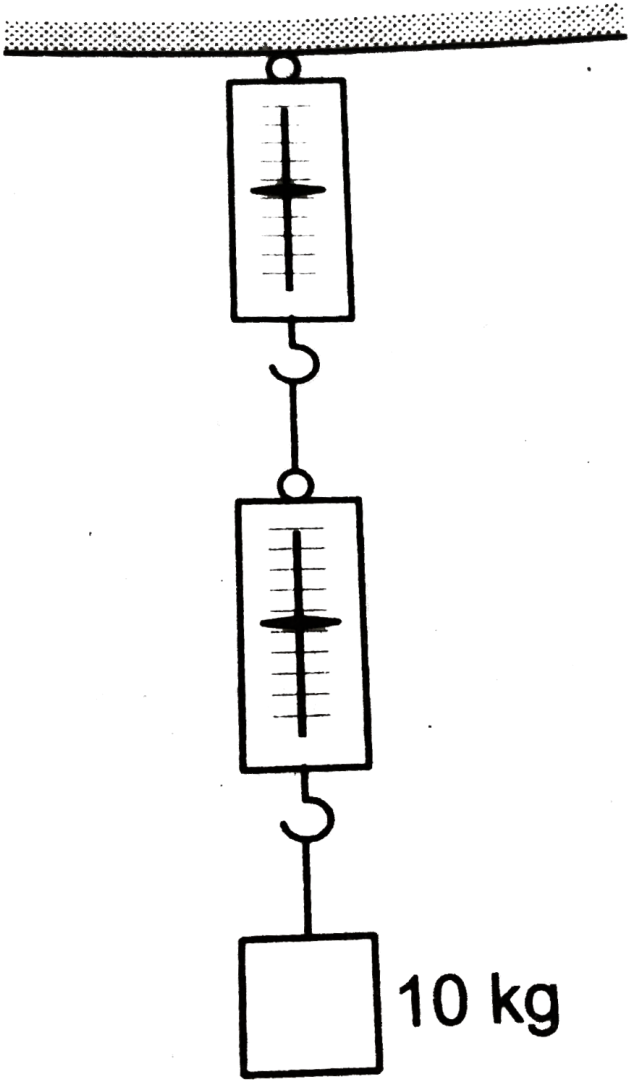
18. A block of mass 10 kg is suspended through two light spring balances as shown in figure



A. Both the scales will read 10 kg

B. Both the scales will read 5 kg 10 kg

C. The upper scale will read 10 kg and the lower scale zero

D. The reading can be anything but their sum will be 10 kg.

Answer: A

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