



# PHYSICS

## BOOKS - HT Olympiad Previous Year Paper

### NSO QUESTION PAPER 2019-20 SET A

Science

1. Which of the following is correct for the size of image formed by a plane mirror?

A. I only

B. I and III only

C. II and III only

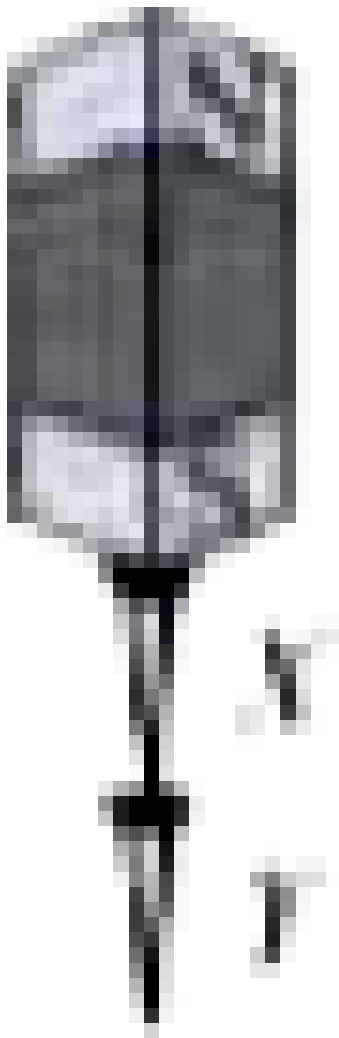
D. I, II and III

**Answer: B**



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2. The given figure shows two iron nails Y and Y hanging from a magnet. Which of the following statements are correct?



I. Top of nail Y is north pole and bottom of nail Y is south pole.

II. Top of nail X is north pole and bottom of

nail X is south pole.

III Magnetic properties are induced into both the nails X and X

IV. Magnetic properties are induced into the nail X only

A. I and II only

B. II and III only

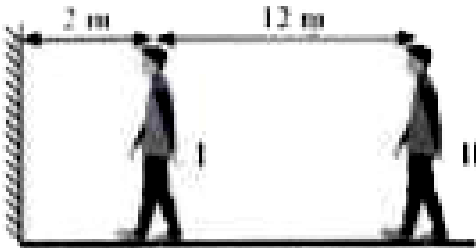
C. I, II and III only

D. I, III and IV only

**Answer: C**



3. Two boys are standing in front of a plane mirror as shown in the figure. If boy II walks 7 m towards boy I, then how far would the image of boy II appear to boy I?



- A. 7m
- B. 9m

C. 11m

D. 14 m

**Answer: B**



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**4.** What is/are the main reason(s) that some places on Earth are warmer than others?

I. Sun stays above the horizon 24 hours a day at some places.

II. The rays of the sun are more direct at some places and more slanting at other places

A. I only

B. II only

C. I and II

D. None of these

**Answer: B**



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5. A beaker containing 2 kg of ice at  $0^{\circ}\text{C}$  is floating in a bucket that contains 5 kg of water at  $0^{\circ}\text{C}$ . Which of the following statements is correct regarding this?

- A. Heat flows from ice to water.
- B. Heat flows from water to ice.
- C. No heat flows between ice and water.
- D. Ice will melt completely.

**Answer: C**



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6. Read the given statements and select the correct option

Statement 1: Lift, escalator and crane all use pulleys to function.

Statement 2: A pulley is a rigid rod arranged in such a manner that it can move freely around a fixed point.

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.

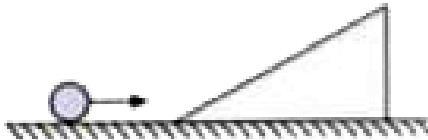
D. Both statements 1 and 2 are false.

**Answer: C**



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7. A glass ball initially rolling at a constant speed, moves up a smooth slope as shown in the figure. Which of the following options is true about its energy as it is rolling up the slope?



- |    | <b>Kinetic energy</b> | <b>Potential energy</b> |
|----|-----------------------|-------------------------|
| A. | Remains same          | Decreases               |
| B. | Increases             | Remains same            |
| C. | Decreases             | Increases               |
| D. | Decreases             | Decreases               |



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8. Which of the following statements are correct?

I. Human body is a good conductor of electricity.

II. The air gap surrounding an electric circuit acts as a conductor

III. Silver conducts electricity better than copper:

IV. When electricity lights up a bulb, no heat is produced.

A. I and III only B.

B. I and II only

C. III and IV only

D. II, III and IV only

**Answer: A**



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**9.** Which of the following statements are incorrect?

(i) A bag placed below the seat of a moving bus is in motion with respect to the floor of

the bus.

(ii) While measuring length of an object using a metre scale, use the zero-mark even if the ends are worn out.

(iii) Blinking of eyes is an example of periodic motion.

(iv) If a body as a whole moves around in a circular path, the motion is known as revolution.

A. I, II and IV only

B. I, II and III only

C. II, III and IV only

D. I, III and IV only

**Answer: B**



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**10.** A rectangular block of substance X has a length of 10 cm, breadth 5 cm and height 2 cm. The mass of the block is 0.027 kg. If density of water is  $1 \text{ g/cm}^3$  then, which of the following statements is correct?

- A. The block will float in water as its density is  $0.27 \text{ g/cm}^3$
- B. The block will sink in water as its density is  $2.7 \text{ g/cm}^3$
- C. The block will sink in water as its density is  $0,027 \text{ kg/cm}^3$
- D. The block will float in water as its density is  $0.0027 \text{ g/cm}^3$

**Answer: A**



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**11.** Consider the following phenomena:

(i) Volcanic eruptions

(ii) Growth of plants

(iii) Phases of Moon

(iv) Occurrence of a rainbow

(v) Rusting of iron

(vi) Opening of a morning glory flower

Which of the above phenomena can be classified as non-periodic changes?

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

B. (i), (ii), (iv) and (v) only

C. (iv), (v) and (vi) only

D. (iii) and (vi) only

**Answer: B**



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**12.** Which of the following substances has fixed mass, fixed volume but no fixed shape?

A. Aluminium foil

B. Nitrogen

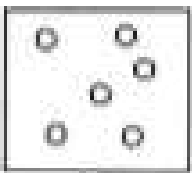
C. Fruit juice

D. Ice

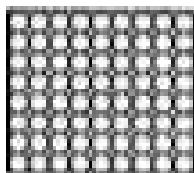
**Answer: C**

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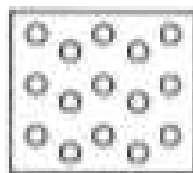
**13.** Arrangement of particles in three different states of water is shown in the given figures.



I



II



III

Study the figures carefully and select the correct option.

A. State I is gas and can be converted to state III by heating

B. State III is liquid and can be converted to state I by cooling.

C. State II is solid and can be converted to state III by heating

D. State III is gas and can be converted to state I by heating.

**Answer: C**



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