



PHYSICS

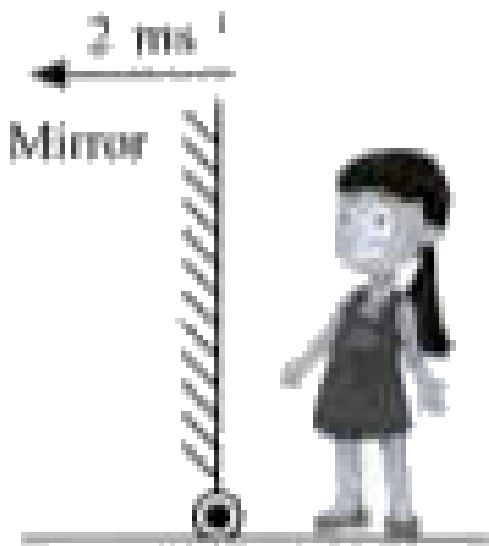
BOOKS - HT Olympiad Previous Year Paper

NSO QUESTION PAPER 2020-21 SET A

Science

1. Radhika is standing still in front of a plane mirror that is moving away from her at a rate

of 2 m in one second. How fast does she see her image moving away?

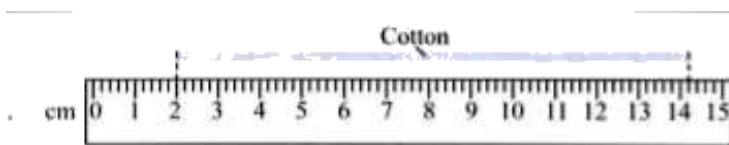


- A. 1 m in one second
- B. 2 m in one second
- C. 4 m in one second
- D. 0.5 m in one second

Answer: C



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2.

Length of a cotton thread is measured between two points on a ruler. When the length of cotton is wound closely around a pencil. it goes round five times. What is the length of the cotton thread needed to once round the pencil?

A. 2.70 cm

B. 2.91 cm

C. 13 cm

D. 2.44 cm

Answer: D



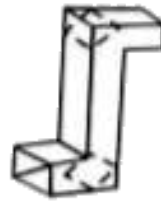
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(i)



(ii)



(iii)

3.

Which of the items above will allow you to see around a corner from where you are standing?

A. (i) only

B. (iii) only

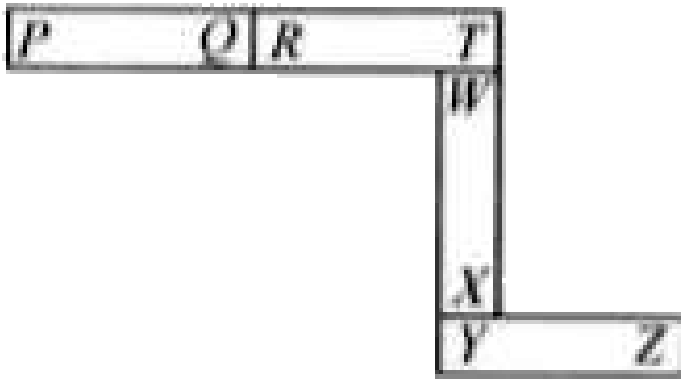
C. (i) and (ii) only

D. (i) and (iii) only

Answer: B



4. Observe the given figure and identify the correct statements.



- (i) Poles P, R, W and Y are like poles.
- (ii) Poles (T, Y and Z are like poles.
- (iii) Pole R will attract pole Z.

A. I only

B. II only

C. I and II only

D. I and III only

Answer: D



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5. Explain why, a single-fixed pulley is used to lift a load even if its MA is equal to 1?

- A. The direction of the force required to lift the object is changed.
- B. The force required to move the object is applied over a greater distance.
- C. More work is done while moving the object
- D. Less force is needed to lift the object.

Answer: A



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6. An object looks green in white light. Now the white light is passed through a clear blue plastic on the same object. What colour will the object appear to be?

A. Green

B. Magenta

C. Black

D. Red

Answer: C



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7. Knocking a nail into a wooden block with a hammer involves conversion between different forms of energy. Which of the following options present the correct order for this conversion?

A. Chemical energy \rightarrow (Sound energy+heat energy) \rightarrow kinetic energy

B. Chemical energy \rightarrow kinetic energy \rightarrow (sound energy + heat energy)

C. Chemical energy \rightarrow kinetic energy-heat
energy

D. (Sound energy + heat energy) \rightarrow
kinetic energy \rightarrow chemical energy

Answer: B



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8. Read the following given statements and select the correct option

Statement 1: Jupiter does not experience short

seasons like the Earth.

Statement 2 : Jupiter is more tilted than the Earth.

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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9. A clock is started at noon. By 20 minutes past 5 PM on the same day, the angle through which the hour hand has turned is

A. 150°

B. 160°

C. 145°

D. 155°

Answer: B



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10. Which of the following statements is incorrect?

A. To increase the magnetic strength, increase the number of strokes while creating magnets.

B. To increase the magnetic strength, increase the number of coils around the nail.

C. Magnetic force is a pulling force only.

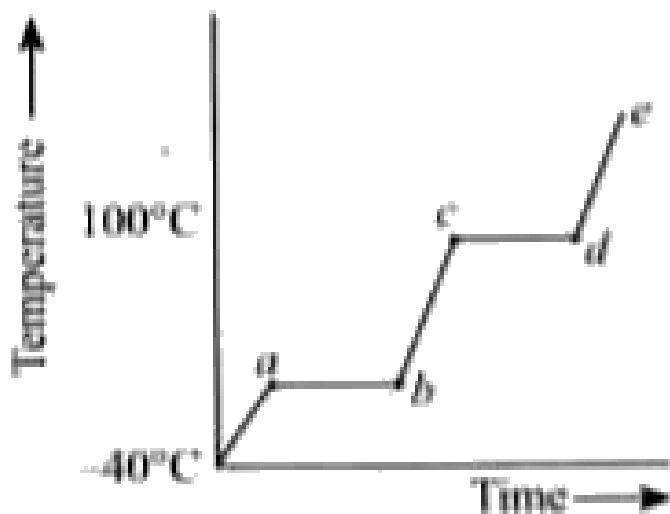
D. Magnet may lose its magnetic property when heated to a very high temperature.

Answer: C



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11. The given figure shows the heating curve of a substance.



Straight parts *ab* and *cd* of the curve show that

A. No heating is done during this period

B. Heat energy is used to overcome the forces of attraction between the particles

C. Thermometer showed some error during this period

D. Energy of particles of the substance is zero during this period.

Answer: B



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12. A few characteristics are listed here.

(i) Good conductors

(ii) Transparent

(iii) Lustrous

(iv) Solid

(v) Opaque

(vi) Insulators The characteristics generally shown by metals are

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

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

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

D. (ii), (iii) and (vi) only.

Answer: B



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13. Smriti, a class 6 student has classified a few substances as shown in the table.

S. No.	Substance	Property
1.	Metal plate	Opaque
2.	Magnifying glass	Translucent
3.	Muslin cloth	Opaque
4.	Dressing mirror	Transparent
5.	Bathroom window glass	Translucent

Substances classified incorrectly are

- A. Only 2 and 3
- B. Only 2, 3 and 4
- C. Only 1 and 4
- D. Only 1, 2, 4 and 5

Answer: B



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14. Melting point of substance X is 10°C and boiling point is 115°C .

Which of the following is incorrect regarding the particles of X?

A. Particles of X have maximum interparticle forces at -20°C .

B. Particles of X have maximum interparticle distance at 105°C

C. Particles of X have definite shape but no definite volume at -5°C

D. Particles of X do not have definite shape and definite volume at 120°C .

Answer: B



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15. Paheli asked for a glass of water from Boojho. He gave her a glass of ice cold water. Paheli observed some water droplets on the

outer surface of the glass and asked Boojho how these droplets of water were formed? Which of the following should be Boojho's answer?

- A. It leaked through the glass.
- B. It came from the table.
- C. It came from the air
- D. The water droplets are formed because of sublimation.

Answer: C





16. Read the following statements and state (T) for true and (F) for false.

I. The process of pouring out liquid into another container without disturbing the sediment is called decantation.

II. Impure substances melt at a fixed temperature.

III. Method in which the mixture containing dissolved particles is rotated at a high speed is called centrifugation.

IV. Filtration can be used to separate components of a mixture of a soluble solid and liquid.

A. I II III IV
 T F T F

B. I II III IV
 F F T T

C. I II III IV
 T T T F

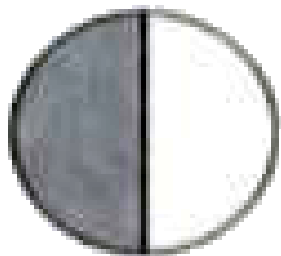
D. I II III IV
 F F F T

Answer: A

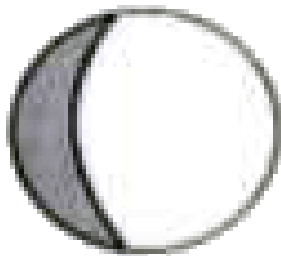


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17. Rashmi observed different phases of Moon on May 4 and May 8 as shown in the picture.



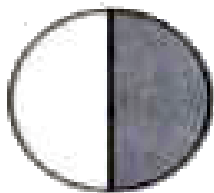
May 4



May 8

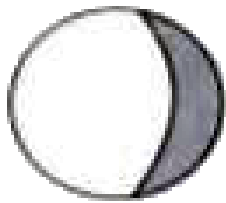
Which phase of Moon will she most likely see on May 11?

A.

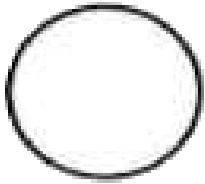


B.





C.



D.

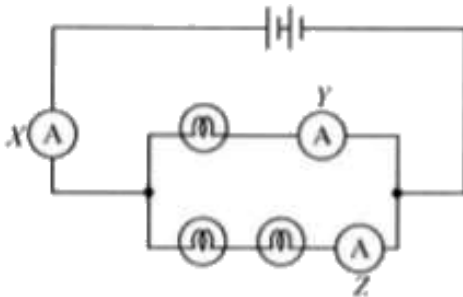
Answer: D



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Achievers Section

1. In the circuit shown, three identical ammeter X, Y and Z has been added that measures the current in the respective area. What is the order of the magnitudes of readings on the ammeter from largest to smallest?



- | | Largest | Intermediate | Smallest |
|----|----------------|---------------------|-----------------|
| A. | Z | Y | X |
| B. | Y | X | Z |
| C. | X | Y | Z |
| D. | X | Z | Y |



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