YEAR 2005 PAPER 1: 23ᴿᴰ NOVEMBER, 2005
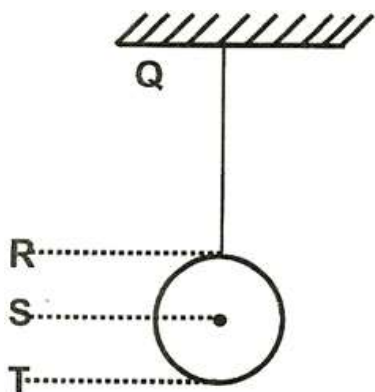
1. The figure below represents a pendulum


The length of this pendulum is the distance from ...

A. Q to R

B. R to T

C. Q to S

D. Q to T

2. On a distance-time graph, a horizontal line indicates ...

A. constant speed.

B. zero speed.

C. constant velocity.

D. constant acceleration.

3. The density of aluminium is 2.7g/cm^3. The volume occupied by 13.5g of this metal is...

A. 5.0cm^3.

B. 10.8cm^3.

C. 16.2cm^3.

D. 37.0cm^3.

4. The velocity of a toy car of mass 2kg increased from 5m/s to 10m/s in 2 seconds. What force was exerted on the car?

   A. 1.25N

   B. 2.5N

   C. 5N

   D. 10N

5. **A** stone of mass 2kg is dropped from a height of 3 metres. Neglecting air resistance, the kinetic energy in joules of the stone just before it hits the ground is:

   A. 6

   B. 8

   C. 16

   D. 60

6. Large metal bridges are often mounted on roller bearings to ...

   A. prevent the bridge sinking into the ground.

   B. allow for expansion and contraction of the bridge.

   C. enable the bridge to be moved from one side to the other.

   D. support the weight of the bridge.

7. Which of the following is a measure of the average kinetic energy possessed by each molecule of an object?

   A. Inertia

   B. Force

   C. Power

   D. Temperature

8. In cold weather the metal handle of a slasher feels colder than the rubber handle. This is because...

   A. the metal is at lower temperature than the handle.

   B. the metal is at a higher temperature than the rubber.

   C. the metal is a better conductor of heat than the rubber.

   D. the molecules in the metal are vibrating faster than those in the rubber.

9. The figure below shows transverse progressive waves of frequency 3 Hz.
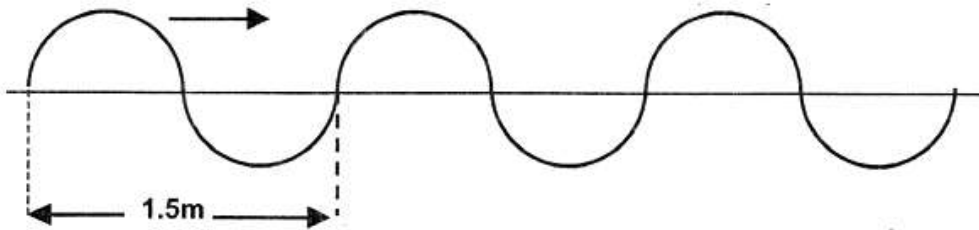
What distance do they move further to the right in every 1 second?

    A. 1.5m

    B. 3.0m

    C. 4.5m

    D. 6.0m

10. A convex lens of focal length 5cm is to be used to magnify the object shown in the figure below
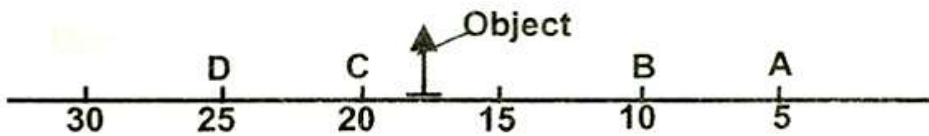
   Which of the labelled points should the lens be placed?

11. Which of the following cannot be a sound wave? A wave …

    A. Which requires a medium to travel.

    B. Whose pitch increases with frequency

    C. Which passes through outer space.

    D. Which is longitudinal in nature.

12. **Fig. 12.1** below shows the magnetic field lines on two pieces of permanent magnets.

Magnet

Fig. 12.1

Field lines
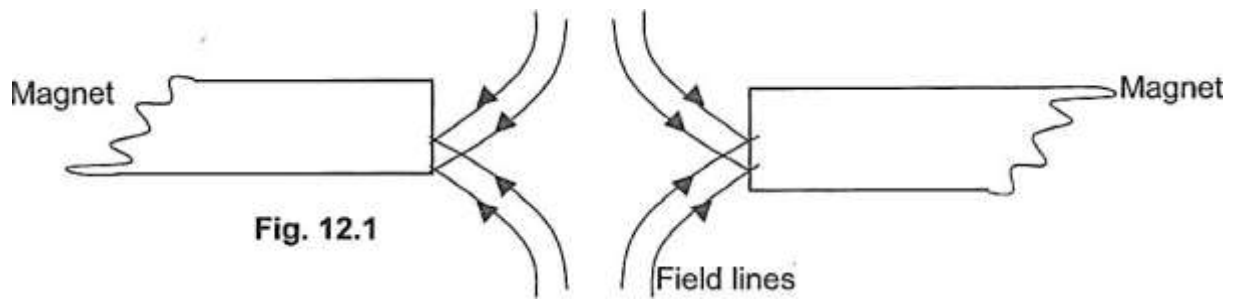
Magnet

The field pattern is produced by ...

    A. two north poles.

    B. two south poles.

    C. a north pole and a south pole.

    D. a south pole and an unmagnetised iron bar.

13. If a strip is charged positively by rubbing it with a cloth, it means the strip ...

    A. gains electrons.

    B. loses protons.

    C. loses electrons.

    D. gains protons.

14. In the circuit diagram below, the potential difference across the 1Ω resistor is 2V.

4.5V

1Ω

2Ω

(A)

Fig. 14.1

3Ω
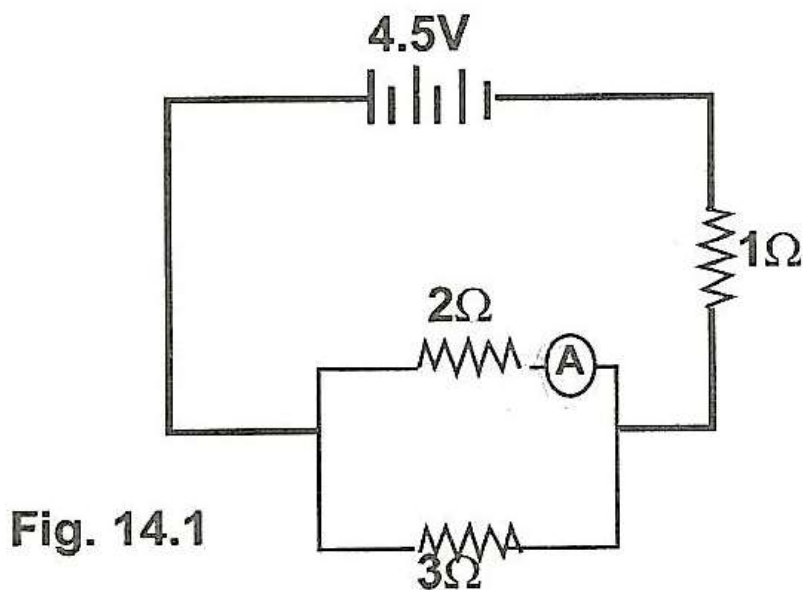
What is the reading of the ammeter **A?**

A. 1.25A

B. 1.0A

C. C 2.0A

D. **1.33** A

15. It is recommended that all solar photovoltaic panels of rating greater than 50 Wp be earthed. This is to ...

    A. complete the electric circuit.

    B. prevent the panel from overheating.

    C. reduce the risk of electric shock.

    D. avoid power losses.

16. An electrical appliance is rated 240v 500w. What is the cost of using this appliance for 60 minutes if electrical energy costs K100.00 per Kwh?

    A. K50

    B. K60

    C. K100

    D. K500

17. The figure below shows part of a wire placed between two poles of a magnet.
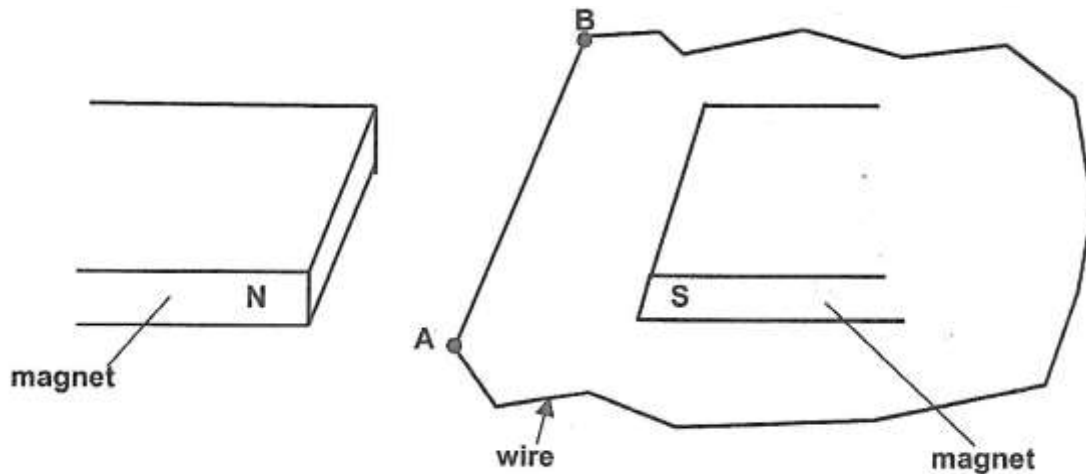
In which direction should part AB of the wire be moved, for the current induced in it to flow towards B?

    A. To the left
    B. To the right
    C. Downward
    D. Upwards

18. A 6V, 24W lamp shines to full brightness when it is connected to the output of a mains transformer as shown in the figure below.

Fig. 18.1
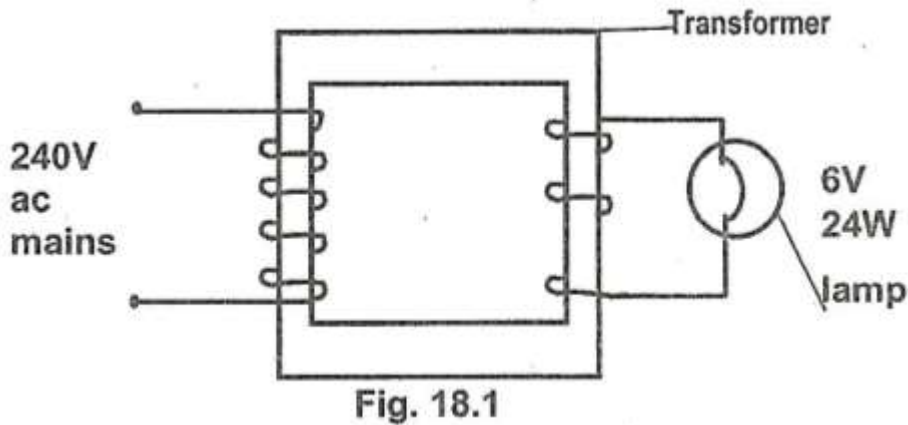
Assuming the transformer is 100% efficient, what current flows in the mains cable?

A. 0.01A

B. 0.1A

C. 0.4A

D. 4.0A

19. The product of gamma decay of the aluminium isotope Al is

A. $^{27}_{12}Al.$

B. $^{26}_{13}Al$

C. $^{27}_{13}Al$

D. $^{27}_{14}Al$

20. A radioactive source has a half-life of 80 hours. How long does it take its activity to fall to a quarter (%) of its original value?

A. 20 hours

B. 40 hours

C. 80 hours

D. 160 hours