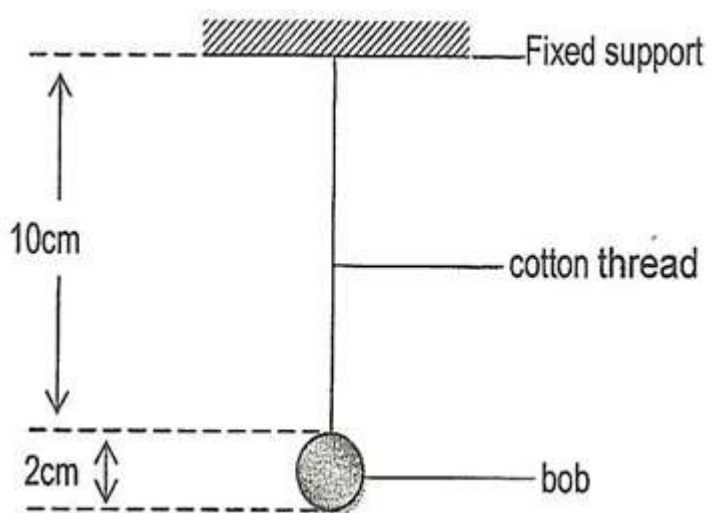**YEAR 2013 PAPER 1: OCTOBER 2013**

1. The diagram below represents a pendulum.

The length of the pendulum is .. •

    A. 2cm.

    B. 10cm.

    C. 11cm.

    D. 12cm.

2. Which of the following numbers has three significant figures?

    A. 0.0003

    B. 0.0030

    C. 0.0300

    D. 0.3000

3. Which graph represents the motion of a body thrown vertically upwards into the with negligible air resistance?

A

Speed (m/s)

time(s)

B

Speed (m/s)

time(s)

C

Speed (m/s)

time(s)

D

Speed (m/s)

time(s)
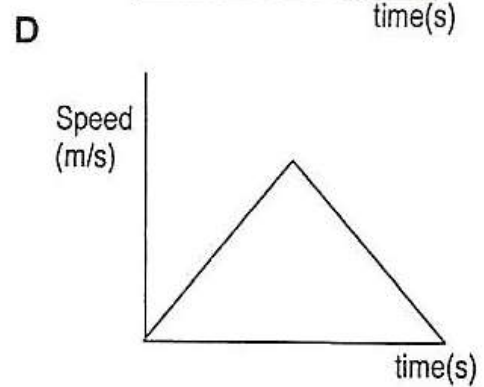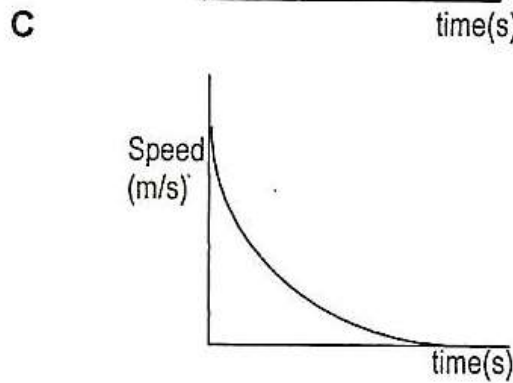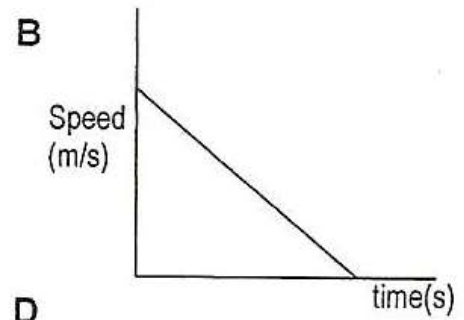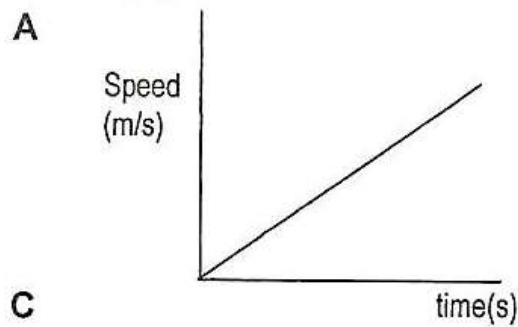
4. An Astronaut goes to the moon where the gravitational field strength is 1,6N/kg. What will be the changes, if any, in his mass and weight when he lands on the moon?

	Mass	Weight
A	Same on earth and moon	Less on moon
B	Less on moon	Same on earth and moon
C	Less on earth	Less on moon
D	More on earth	More on moon

5. A body has a mass of 2kg. It accelerates from 20m/s to 40m/s in 4 seconds. The resultant force is ...

A. 8N.

B. 10N.

C. 20N.

D. 30N.

6. A force of 500N is applied to a box in the direction shown to move it up an incline.
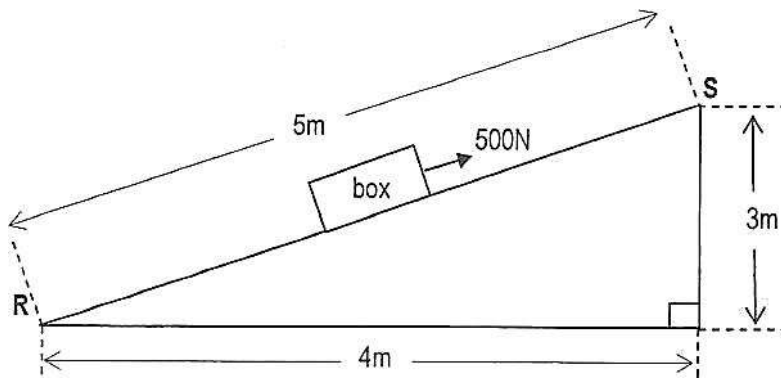
It takes **3** seconds to move this box from **R** to **S.** The useful power generated is …

A. 500.0 W

B. 666.7 W

C. 833.3 W

D. 1500.0 W

7. Which of the following gives the states of matter in which molecules at a given temperature have the highest speed and the strongest cohesive force?

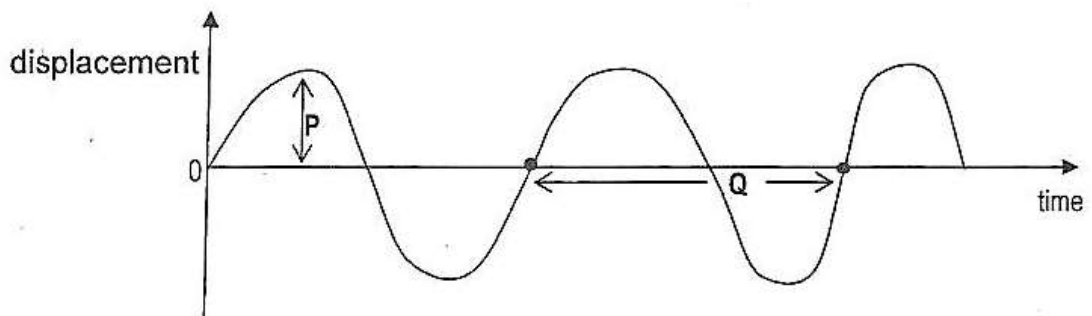**Highest speed   Strongest force between them**

A	gas	solid
B	gas	gas
C	solid	gas
D	solid	solid

8. The figure below shows an ideal pulley system.
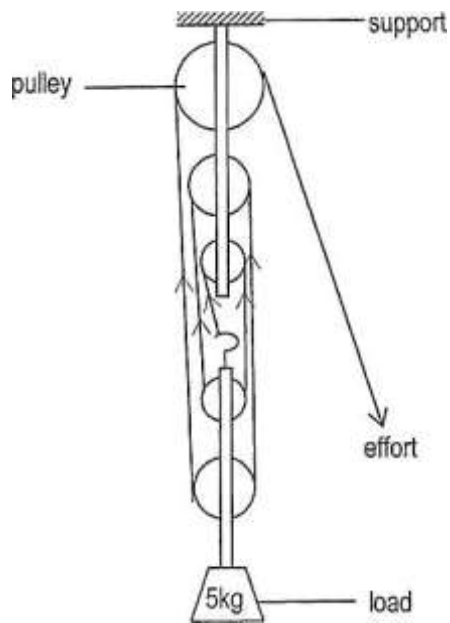
Assuming $g = 10m/s^2$, the minimum effort required to raise the load is...

A. 1N.

B. 5N

C. 9N

D. 10N

9. Warm water which is left in a clay pot gradually cools. This is because • • •

A. heat no longer reaches the water.

B. of evaporation of water from the pot.

C. there is no condensation.

D. of convection currents in water.

10. The figure below shows a graph of wave motion.

Which quantities are shown by distance P and Q?

|	P	Q
A.	Amplitude	Period
B.	Half the amplitude	period
C.	Amplitude	wavelength
D.	half the amplitude	wavelength

11. All of the following are properties of a radio wave except...

    A. A it causes particles of a medium to vibrate perpendicular to its direction.

    B. it travels with a speed approximately 3×10^8 m/s in air

    C. It is undeflected by electric or magnetic fields.

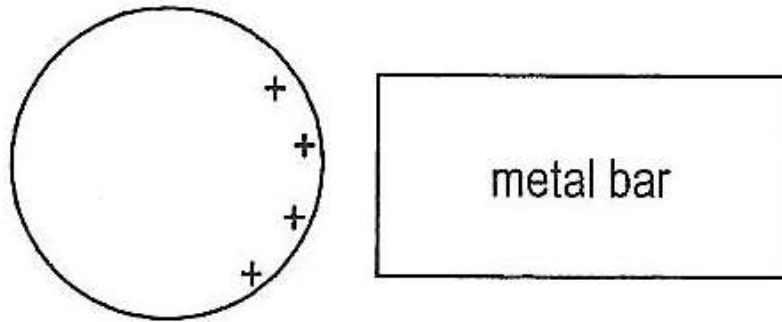   D. It does not travel in a vacuum.

12. The diagram below shows a bar of iron placed near a magnet. Both the iron bar and the magnet remain undisturbed.
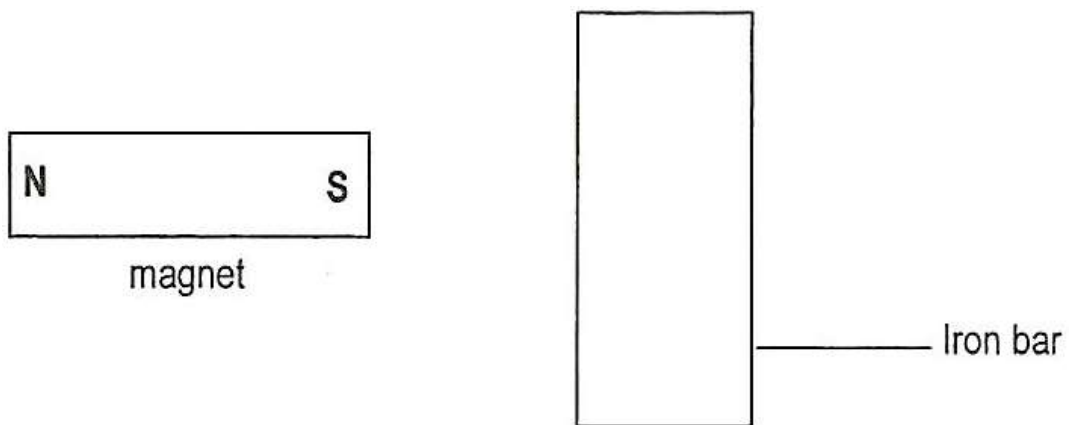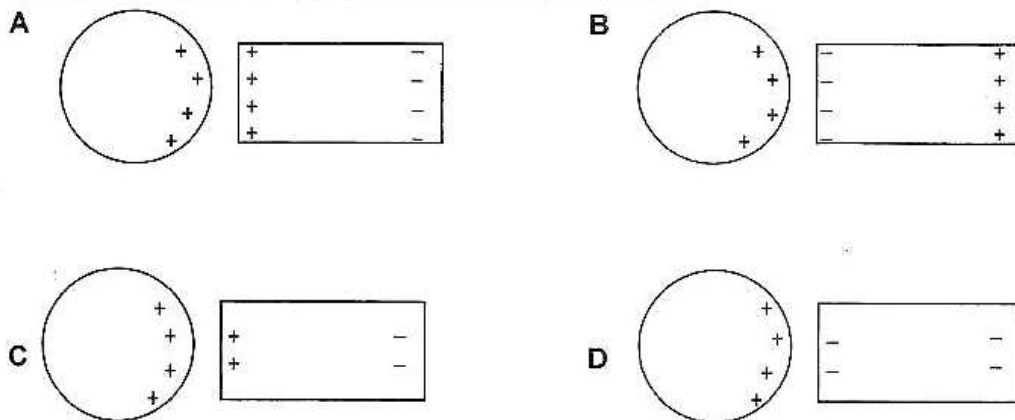

Which of the following correctly shows the magnetic poles on the Iron bar?
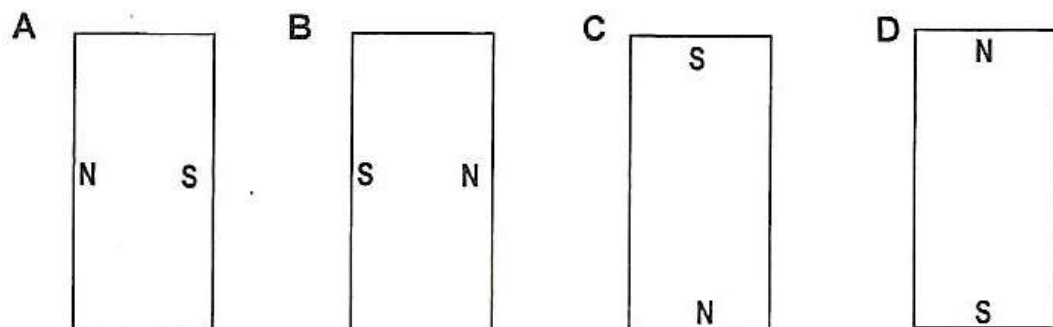
13. A positively charged sphere is moved close to an isolated metal bar.

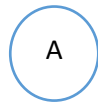Which diagram shows the charges induced on the bar?

14. All of the following are properties of a radio wave except...

    A. A it causes particles of a medium to vibrate perpendicular to its direction.

    B. it travels with a speed approximately 3×10^8 m/s in air

    C. It is undeflected by electric or magnetic fields.

    D. It does not travel in a vacuum.

15. The diagram below represents a parallel circuit.
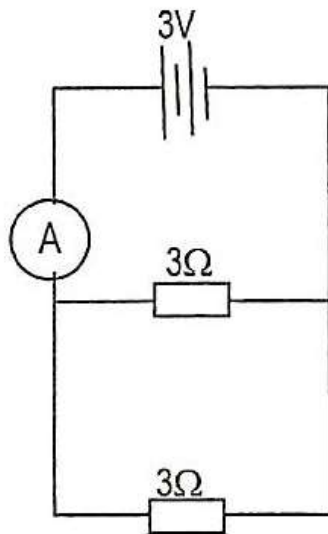
The current through the ammeter, (A) , is

   A. 0.5A

   B. 1.0A

   C. 2.0A

   D. 9.0A

16. In wiring a house a switch is always connected to the live wire. This is ...

   A. because no current flows through the neutral wire.

   B. to avoid short circuits and overheating of elements.

   C. because the circuit can never be switched off if the switch is on the neutral wire.

   D. to make it easier to isolate any device connected in the circuit thus making it safe.

17. An electric appliance is rated 5000W, 250V. A man uses this appliance for 10 hours and pays K25.00 for the electrical energy used. What is the cost of electrical energy per unit?

   A. K0.10

   B. K0.50

   C. K0.80

   D. K2.00

18. Which of the following is true about cathode rays?

    A. They carry a positive charge

    B. They can produce X-rays

    C. They are electromagnetic in nature.

    D. They are lighter than electrons.

19. The diagram shows a coil in a magnetic field which is part of an a.c generator.
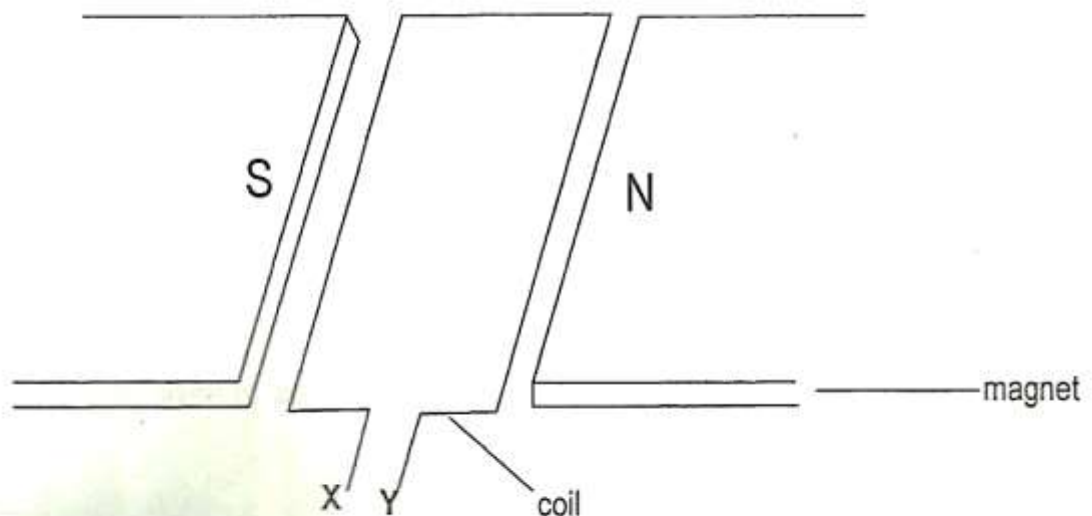
    What must be connected directly to X and Y?

    A. split rings

    B. brushes

    C. slip rings

    D. dc supply

20. The radioisotope sodium - 24, has a half-life of **15** hours. How long would an 8g sample of sodium - 24 take to decay to 1 g?

    A. 45 hours

    B. 60 hours

    C. 90 hours

    D. 120 hours

21. The equation represents the decay of carbon - 14 to nitrogen - 14.

$$^{14}_{6}C \rightarrow\ ^{14}_{7}N + X$$
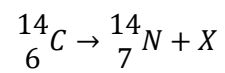
Which of the following is true about radiation X?

    A. It can be repelled by a proton.

    B. It can be repelled by an electron.

    C. It is electrically neutral.

    D. It is an electromagnetic wave.