

International General Certificate of Secondary Education
UNIVERSITY OF CAMBRIDGE LOCAL EXAMINATIONS SYNDICATE

PHYSICS

0625/1

PAPER 1 Multiple Choice

Wednesday 18 MAY 1994

Morning

45 minutes

Additional materials:

- Multiple Choice answer sheet
- Soft pencil (type B or HB is recommended)
- Soft clean eraser

TIME 45 minutes

INSTRUCTIONS TO CANDIDATES

Do not open this booklet until you are told to do so.

Write your name, Centre number and candidate number on the answer sheet in the spaces provided, unless this has already been done for you.

There are forty questions on this paper. Attempt all questions. For each question there are four possible answers labelled A, B, C and D. Choose the one you consider correct and record your choice in soft pencil on the separate answer sheet.

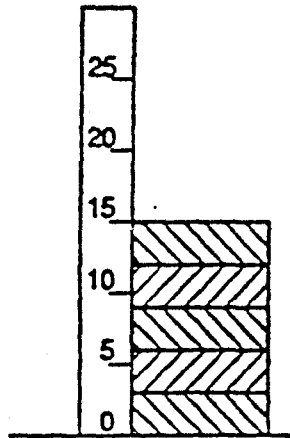
Read very carefully the instructions on the answer sheet.

INFORMATION FOR CANDIDATES

Each correct answer will score one mark. A mark will not be deducted for a wrong answer.

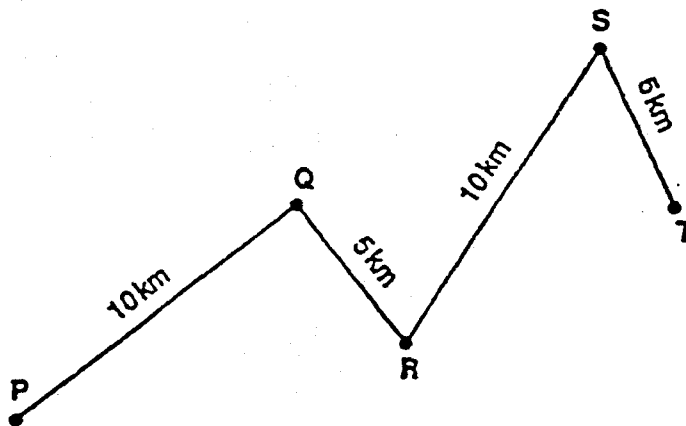
This question paper consists of 18 printed pages and 2 blank pages.

- 1 A centimetre rule is used to measure the height of a pile of similar blocks.



What is the height of one of these blocks?

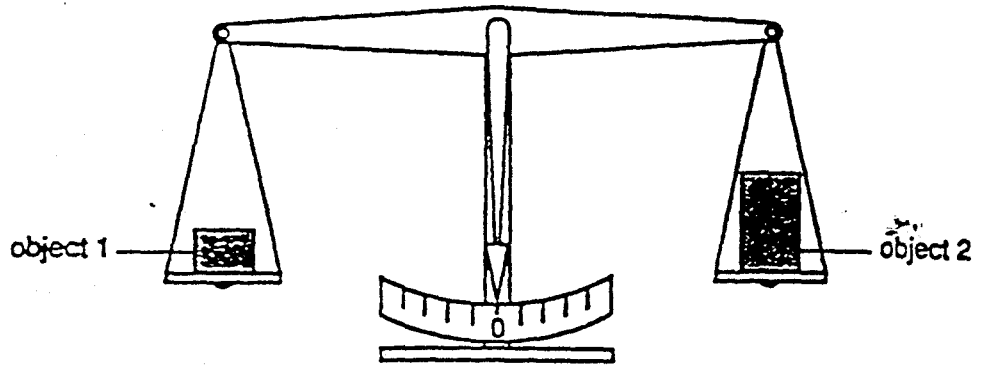
- A 3 cm B 5 cm C 6 cm D 15 cm
- 2 A car travels along the route P, Q, R, S, T in 30 minutes.



What is the average speed of the car?

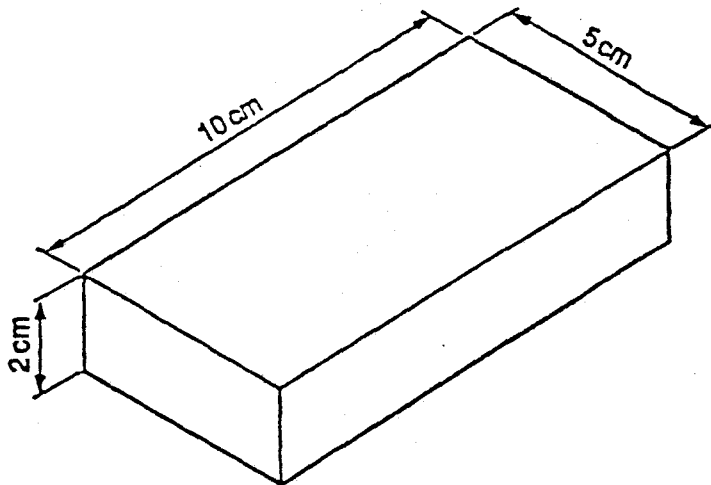
- A 10 km/hour B 20 km/hour C 30 km/hour D 60 km/hour

- 3 Two objects balance each other as shown in the diagram.



What must be the same for the two objects?

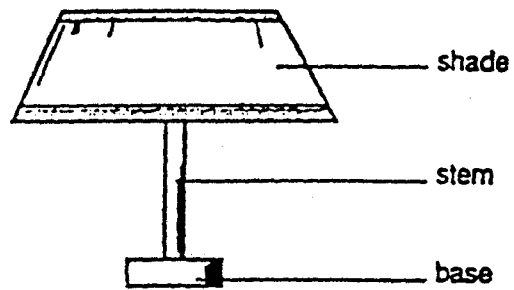
- A density
 - B mass
 - C shape
 - D volume
- 4 A metal block has the dimensions shown. Its mass is 1000 g.



What is the density of the metal?

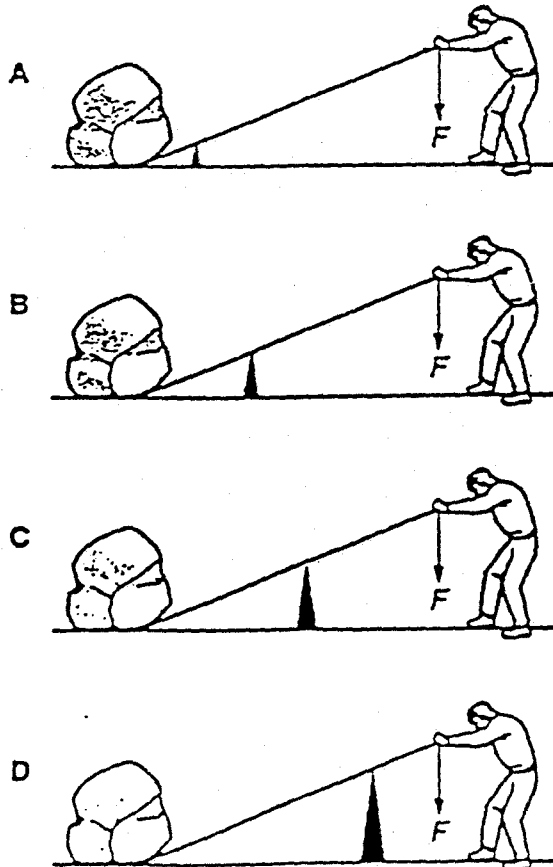
- A $\frac{5 \times 10}{1000 \times 2} \text{ g/cm}^3$
- B $\frac{2 \times 5 \times 10}{1000} \text{ g/cm}^3$
- C $\frac{1000 \times 2}{5 \times 10} \text{ g/cm}^3$
- D $\frac{1000}{2 \times 5 \times 10} \text{ g/cm}^3$

- 5 The table lamp in the diagram is unstable and falls over easily.



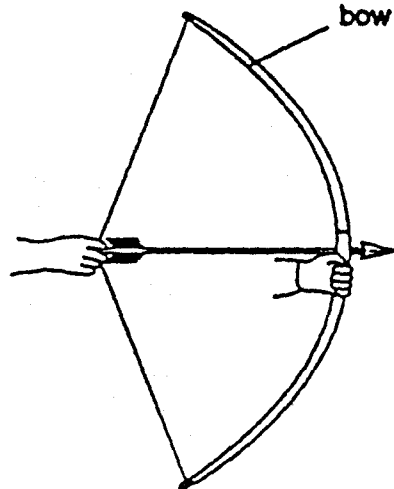
Which change would make the lamp most stable?

- A making the stem heavier and thinner
 - B making the stem heavier and thicker
 - C making the base heavier and wider
 - D making the base lighter and smaller
- 6 The diagrams show a man lifting a heavy rock using a steel bar. He pushes downwards on the end of the bar with force F .



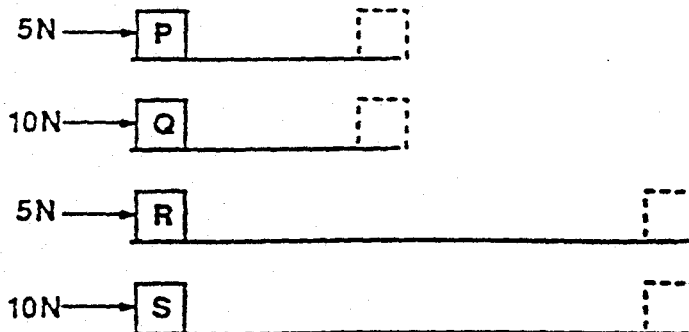
Which pivot position allows the force F to be as small as possible?

- 7 A bow is bent so as to fire an arrow.



What type of energy is stored in the bow because it is bent?

- A chemical energy
 - B gravitational energy
 - C heat energy
 - D strain energy
- 8 Forces are used to move objects P, Q, R and S through the distances shown in the diagrams.

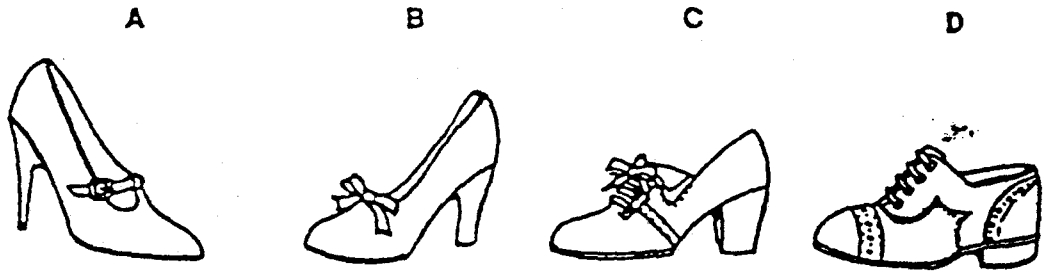


Which statement correctly describes the work done by the forces?

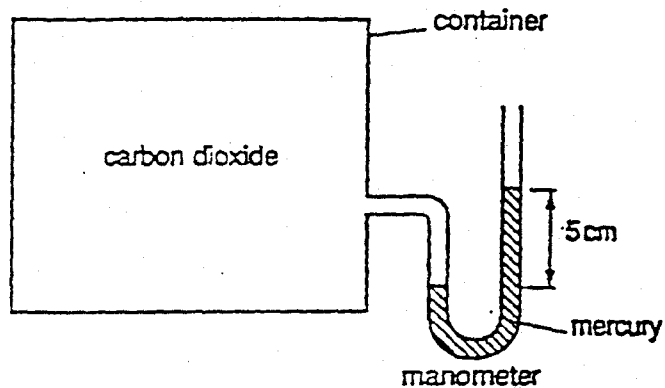
- A The most work is done in moving R.
- B The most work is done in moving S.
- C The same amount of work is done in moving P and Q.
- D The same amount of work is done in moving P and R.

- 9 A young lady is choosing some new shoes, but does not want them to damage floors because of the high pressure caused by heels.

Which type of shoe should she choose so that the pressure of the heels is as small as possible?



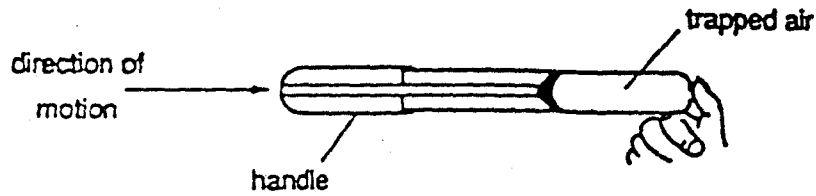
- 10 The diagram shows a manometer connected to a container of carbon dioxide.



Which statement correctly describes the pressure exerted by the carbon dioxide?

- A It is equal to atmospheric pressure.
- B It is equal to 5 cm of mercury.
- C It is equal to 5 cm of mercury above atmospheric pressure.
- D It is equal to 5 cm of mercury below atmospheric pressure.

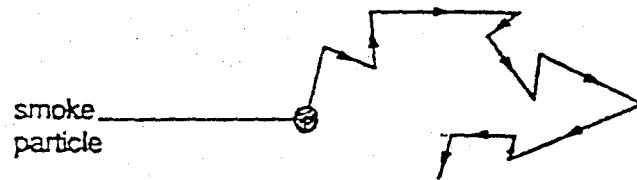
- 11 A student places his thumb firmly on the outlet of a bicycle pump to stop the air coming out.



What happens to the pressure and the volume of the trapped air as the pump handle is pushed in?

- | | pressure | volume |
|---|-----------|------------------|
| A | decreases | decreases |
| B | decreases | remains the same |
| C | increases | decreases |
| D | increases | remains the same |

- 12 Smoke particles suspended in air are viewed through a microscope.



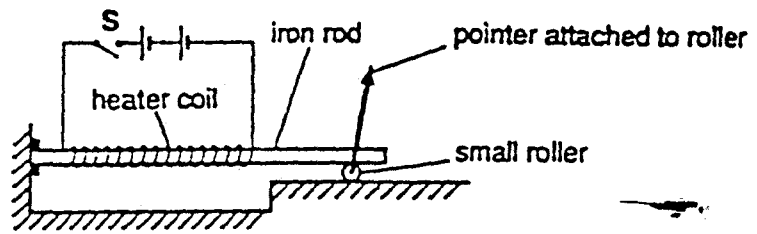
What causes the random jerky path of the smoke particle?

- A air molecules colliding with the smoke particle
 - B convection currents in the air
 - C small changes of pressure in the air
 - D small changes of temperature of the air
- 13 Liquid in an open dish evaporates.

Which molecules of liquid are most likely to escape?

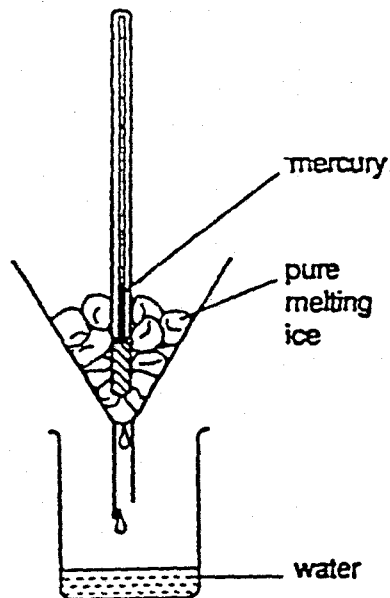
- A molecules on the surface with a lot of energy
- B molecules on the surface with a little energy
- C every molecule with a lot of energy
- D every molecule with a little energy

- 14 The diagram illustrates an apparatus used to show the expansion of iron. The iron is heated by passing a current through a coil.



After the switch S is closed, what is the movement of the pointer and what is the magnetic state of the rod?

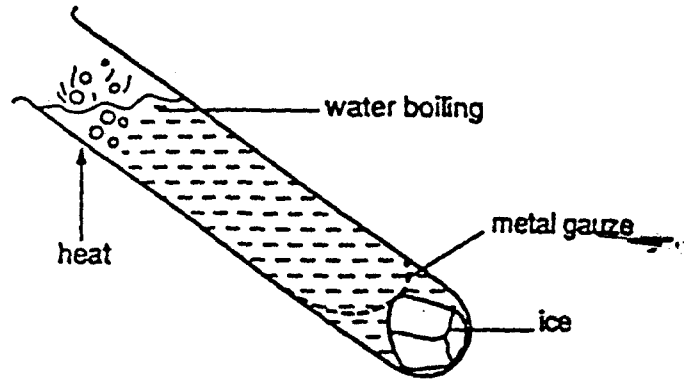
- | | movement of top of pointer | magnetic state of rod |
|---|----------------------------|-----------------------|
| A | to the right | magnetised |
| B | to the right | demagnetised |
| C | to the left | magnetised |
| D | to the left | demagnetised |
- 15 A mercury thermometer without a scale is placed in pure melting ice.



What does the level of mercury in the tube show?

- A the upper fixed point
 B the lower fixed point
 C the melting point of mercury
 D the boiling point of water

- 16 When the experiment shown in the diagram was carried out, the lump of ice melted very slowly.



Why did the ice take a long time to melt?

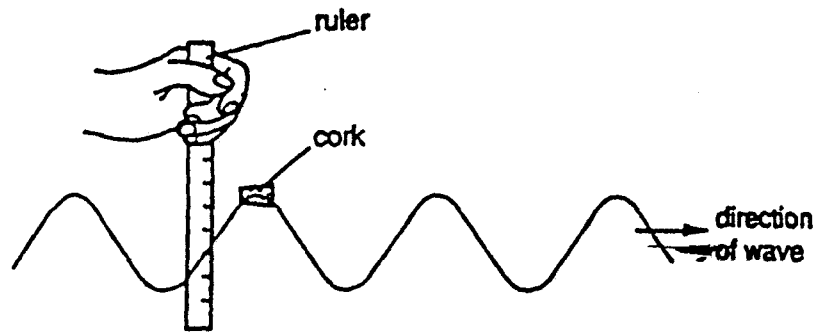
- A Heat can only travel upwards.
 - B Hot water is more dense than cold water.
 - C Metal gauze does not allow heat to pass through.
 - D Water is a poor conductor of heat.
- 17 Jane enters a room and switches on an electric fire.

She stands in front of the fire and feels warm immediately. It takes some time for all of the air in the room to warm up.

What are the main methods by which Jane and the air in the room are heated?

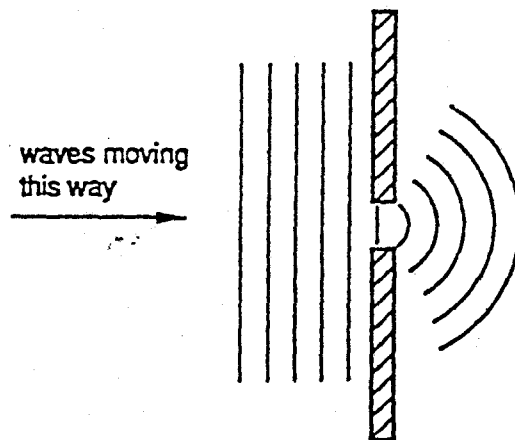
- | | Jane | air |
|---|------------|------------|
| A | conduction | radiation |
| B | convection | radiation |
| C | radiation | conduction |
| D | radiation | convection |

- 18 A student measures how far a cork moves up and down on a wave in a tank of water.



Which quantity can he obtain from his measurement?

- A amplitude
 - B frequency
 - C speed
 - D wavelength
- 19 The diagram shows what happens when water waves pass through a narrow gap.

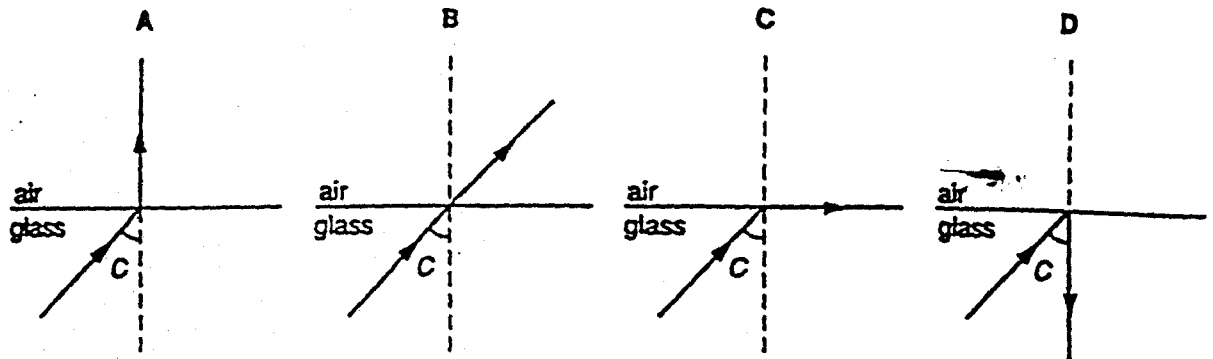


What is the name of the effect shown?

- A diffraction
- B dispersion
- C reflection
- D refraction

20 C is the critical angle for a glass-air boundary.

Which diagram shows the correct path of the light ray?



21 Different types of rays reach the Earth from space.

Which rays make us feel hot?

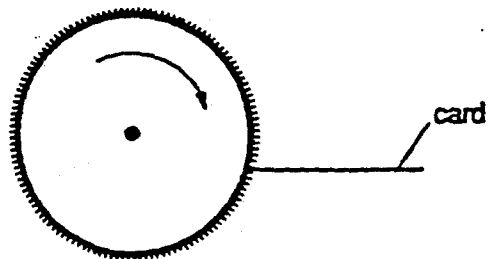
- A gamma rays
- B infra-red rays
- C visible rays
- D X-rays

22 An insect is 1 m in front of a plane mirror.

What is the distance between the insect and its image?

- A 0m
- B 0.5m
- C 1m
- D 2m

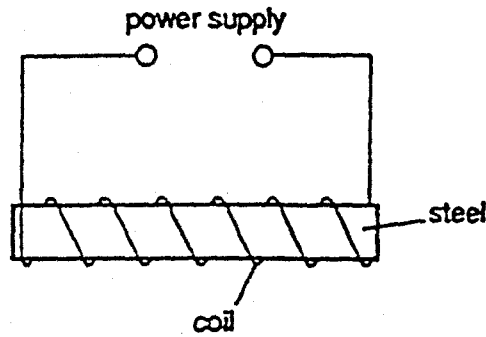
23 A sound is produced by holding a card against a toothed wheel which is rotating.



What is the effect of increasing the speed of the wheel?

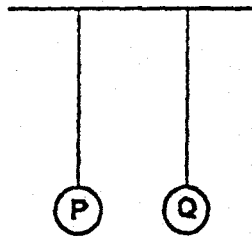
- A a decrease in the pitch of the sound
- B an increase in the pitch of the sound
- C a decrease in the speed of the sound wave
- D an increase in the speed of the sound wave

- 24 The diagram shows some apparatus which can be used to make a piece of steel into a permanent magnet.



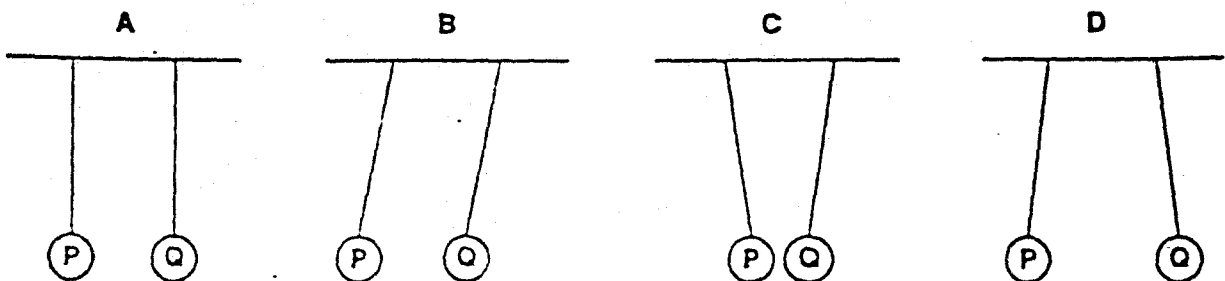
Which power supply would magnetise the piece of steel most effectively?

- A 6V a.c. B 12V a.c. C 6V d.c. D 12V d.c.
- 25 Which statement correctly describes the magnetic properties of iron and steel?
- A Iron is easier to magnetise than steel but more difficult to demagnetise.
 B Iron is easier to magnetise than steel and easier to demagnetise.
 C Iron is more difficult to magnetise than steel and more difficult to demagnetise.
 D Iron is more difficult to magnetise than steel but easier to demagnetise.
- 26 Two similar metal-coated, polystyrene spheres P and Q are suspended side by side.

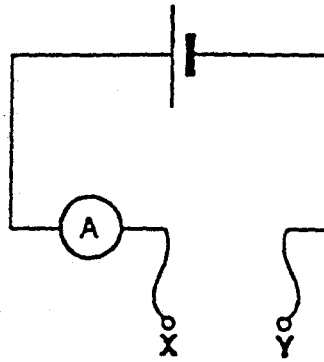


The spheres are then given positive charges.

Which diagram shows the new positions of the spheres?



- 27 A student has four pieces of resistance wire made of the same material. Each piece is connected in turn between the terminals X and Y in the circuit.



With which wire will the current be smallest?

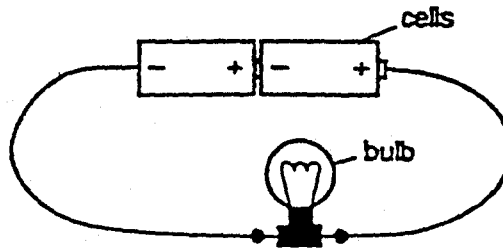
	length	diameter
A	0.5 m	0.5 mm
B	0.5 m	1 mm
C	1 m	0.5 mm
D	1 m	1 mm

- 28 A dry cell is marked '1.5 V'.

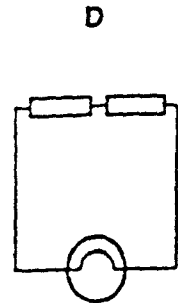
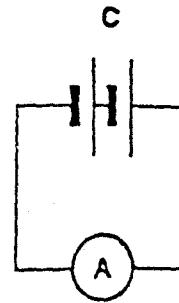
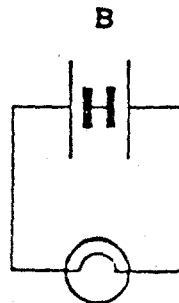
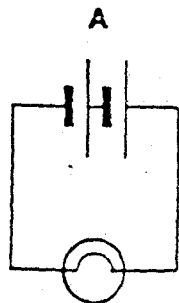
What does the 1.5 V tell us?

- A the current which can be taken from the cell
- B the electrical charge stored in the cell
- C the e.m.f. of the cell
- D the resistance of the cell

- 29 Some electrical components are connected as shown.



Which is the circuit diagram for this arrangement?

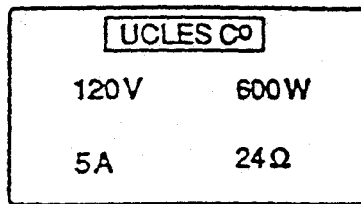


30 What does the symbol below represent?



- A a bell
- B a fuse
- C a relay
- D a switch

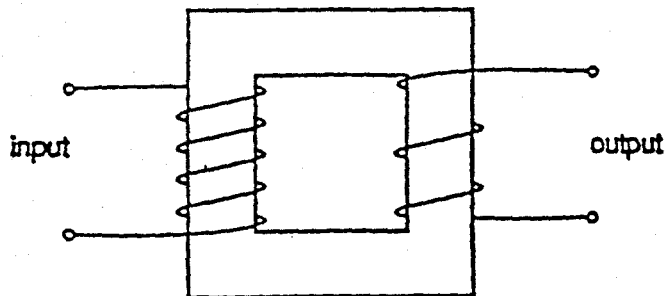
31 The diagram shows a label on a heater.



What is the power of the heater?

- A 5A
- B 24Ω
- C 120V
- D 600W

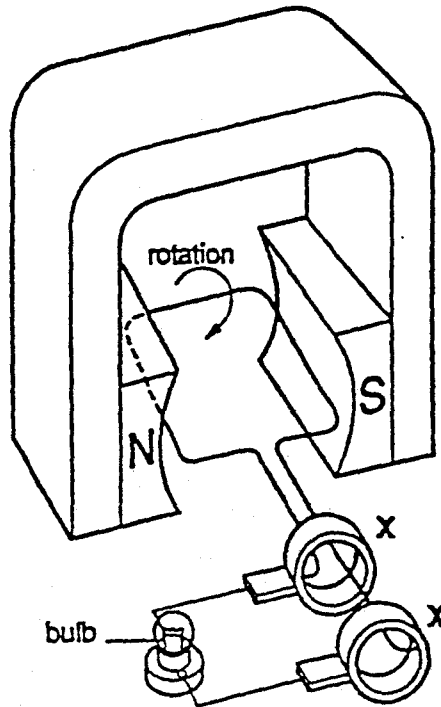
32 The transformer in the diagram has two coils of wire wrapped around a metal core.



Which statement about the transformer is correct?

- A The core is made from copper.
- B The current in both coils is the same.
- C The input and output voltages are different.
- D The transformer will work from a d.c. supply.

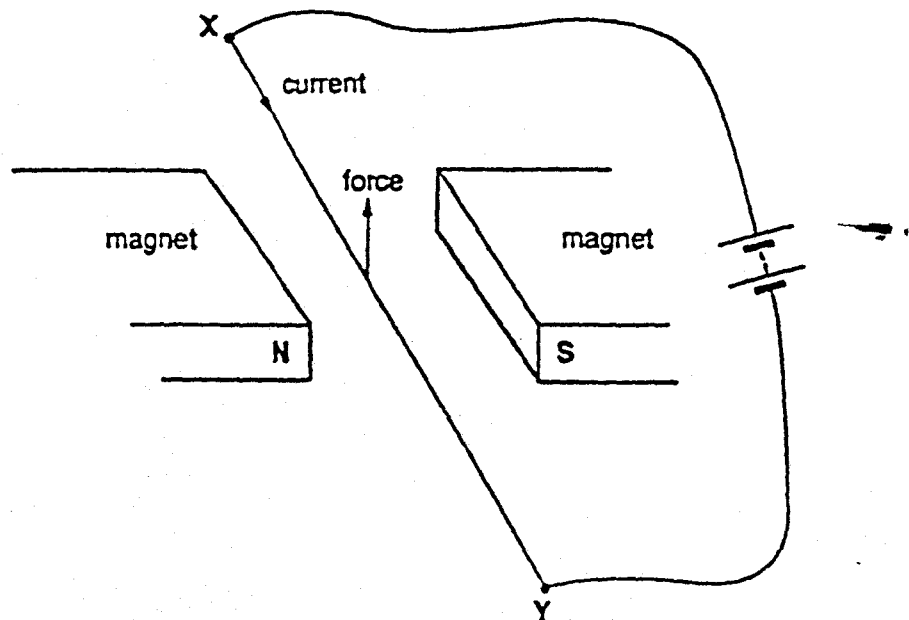
33 The diagram shows a simple alternating current generator.



What are the parts marked X?

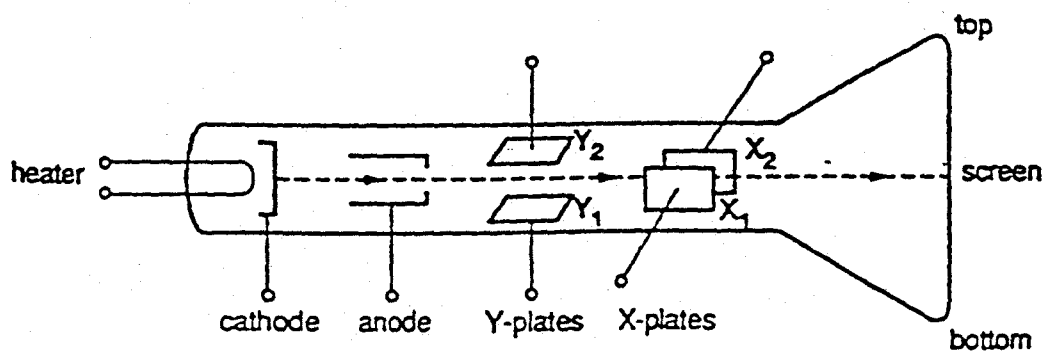
- A carbon brushes
- B coils of wire
- C magnets
- D slip rings

- 34 When the electric current in wire XY is in the direction shown, there is an upward force on the wire.



If the north and south poles exchange positions, in which direction will the force on the wire act?

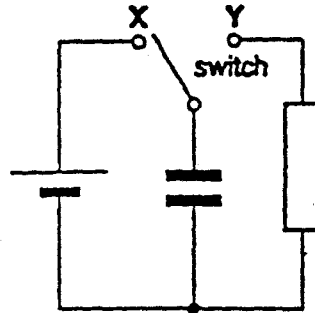
- A downwards
 - B upwards
 - C to the left
 - D to the right
- 35 The diagram shows a cathode-ray tube.



In the cathode-ray tube, what must be done to deflect the electron beam upwards?

- A make X₁ more positive than X₂
- B make X₂ more positive than X₁
- C make Y₁ more positive than Y₂
- D make Y₂ more positive than Y₁

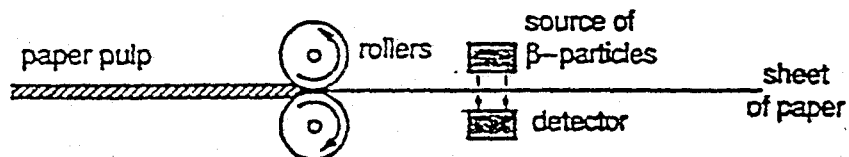
36 The diagram shows a circuit which includes a switch and a capacitor.



What will be happening to the capacitor when the switch is at X and when it is at Y?

- | | switch at X | switch at Y |
|---|-------------|-------------|
| A | charging | charging |
| B | charging | discharging |
| C | discharging | charging |
| D | discharging | discharging |

37 The diagram shows how the thickness of paper may be measured during manufacture. If the sheet is too thick, fewer β -particles reach the detector.



A source of α -particles is not used for this purpose because α -particles would

- A be stopped by the paper.
 - B be too dangerous to those working nearby.
 - C destroy the detector.
 - D set fire to the paper.
- 38 An α -particle has the same composition as
- A an electron.
 - B a helium atom.
 - C a helium nucleus.
 - D a hydrogen nucleus.

39 An atomic nucleus contains 6 protons and 8 neutrons.

How many electrons does the neutral atom possess?

- A 2 B 6 C 8 D 14

40 Which statement about electrons is true?

- A Electrons are positively-charged particles.
- B Electrons are found within the nucleus of atoms.
- C Electrons can be found only in radioactive atoms.
- D Electrons have a smaller mass than protons.