

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
International General Certificate of Secondary Education

**PHYSICS**

**0625/01**

Paper 1 Multiple Choice

May/June 2004

**45 minutes**

Additional Materials: Multiple Choice Answer Sheet  
Soft clean eraser  
Soft pencil (type B or HB is recommended)

**READ THESE INSTRUCTIONS FIRST**

Write in soft pencil.

Do not use staples, paper clips, highlighters, glue or correction fluid.

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

There are **forty** questions on this paper. Answer **all** questions. For each question there are four possible answers **A, B, C**, and **D**.

Choose the **one** you consider correct and record your choice in **soft pencil** on the separate Answer Sheet.

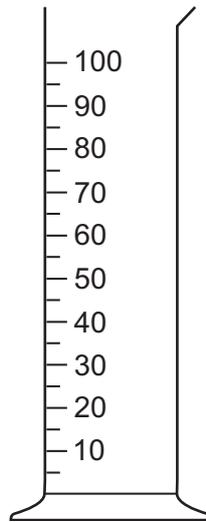
**Read the instructions on the Answer Sheet very carefully.**

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

Any rough working should be done in this booklet.

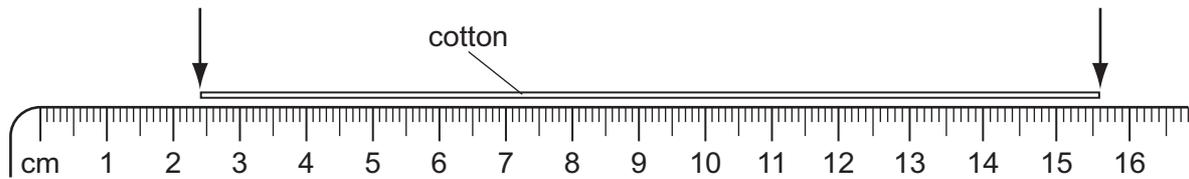
This document consists of **18** printed pages and **2** blank pages.

- 1 The diagram shows a measuring cylinder.

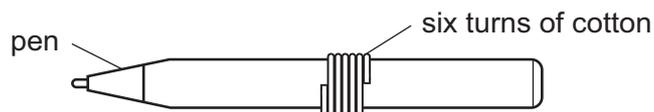


Which unit would be most suitable for its scale?

- A**  $\text{mm}^2$       **B**  $\text{mm}^3$       **C**  $\text{cm}^2$       **D**  $\text{cm}^3$
- 2 A piece of cotton is measured between two points on a ruler.



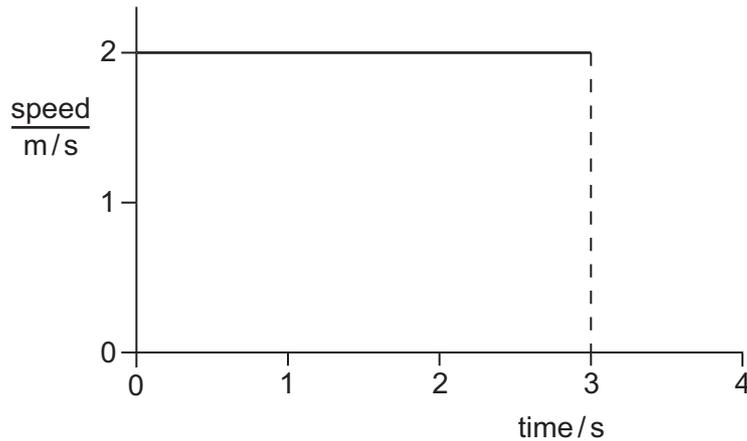
When the length of cotton is wound closely around a pen, it goes round six times.



What is the distance once round the pen?

- A** 2.2 cm      **B** 2.6 cm      **C** 13.2 cm      **D** 15.6 cm

- 3 The diagram shows the speed-time graph for an object moving at constant speed.



What is the distance travelled by the object in the first 3 s?

- A** 1.5 m      **B** 2.0 m      **C** 3.0 m      **D** 6.0 m
- 4 A small steel ball is dropped from a low balcony.  
Ignoring air resistance, which statement describes its motion?
- A** It falls with constant acceleration.  
**B** It falls with constant speed.  
**C** It falls with decreasing acceleration.  
**D** It falls with decreasing speed.
- 5 Which statement about the mass of a falling object is correct?
- A** It decreases as the object falls.  
**B** It is equal to the weight of the object.  
**C** It is measured in newtons.  
**D** It stays the same as the object falls.

- 6 The weights of four objects, 1 to 4, are compared using a balance.



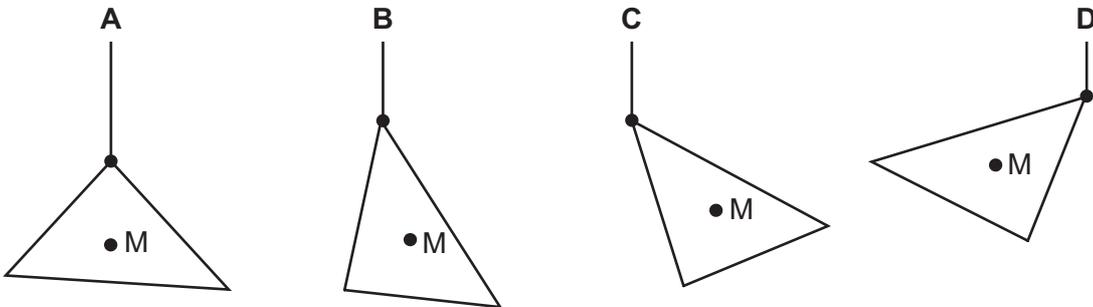
Which object is the lightest?

- A object 1      B object 2      C object 3      D object 4
- 7 Which of the following is a unit of density?

- A  $\text{cm}^3/\text{g}$   
 B  $\text{g}/\text{cm}^2$   
 C  $\text{g}/\text{cm}^3$   
 D  $\text{kg}/\text{m}^2$

- 8 A piece of card has its centre of mass at M.

Which diagram shows how it hangs when suspended by a thread?



- 9 An experiment is carried out to measure the extension of a rubber band for different loads.

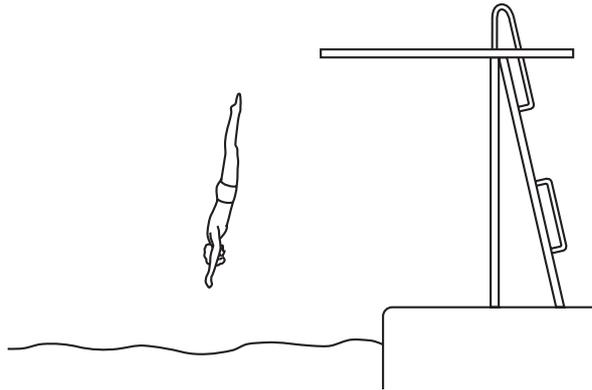
The results are shown below.

load/N	0	1	2	3
length/cm	15.2	16.2		18.6
extension/cm	0	1.0	2.1	3.4

Which figure is missing from the table?

- A 16.5      B 17.3      C 17.4      D 18.3

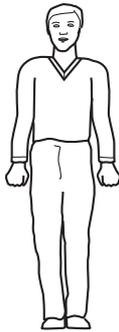
10 The diagram shows a man diving into water.



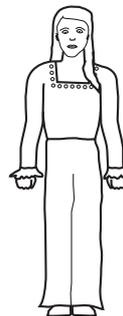
Which form of energy is increasing as he falls?

- A chemical
- B gravitational
- C kinetic
- D strain

11 A boy and a girl run up a hill in the same time.



boy weighs 600 N



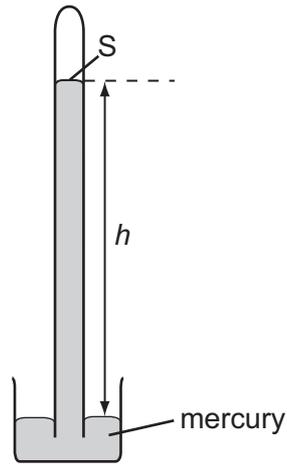
girl weighs 500 N

The boy weighs more than the girl.

Which statement is true about the power produced?

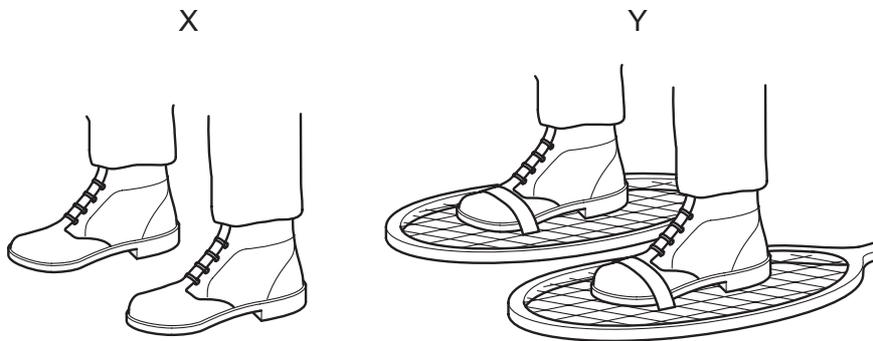
- A The boy produces more power.
- B The girl produces more power.
- C They both produce the same power.
- D It is impossible to tell who produces more power.

- 12 The diagram shows a simple mercury barometer. The barometer reading is  $h$  cm of mercury.



What is the pressure at S?

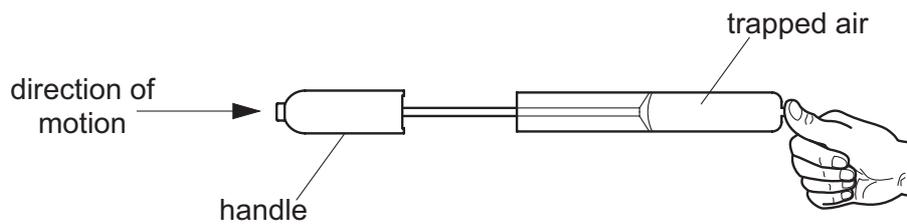
- A** approximately zero  
**B** atmospheric pressure  
**C** atmospheric pressure +  $h$  cm of mercury  
**D**  $h$  cm of mercury
- 13 Two boys X and Y each have the same total weight and are standing on soft ground.



Which boy is more likely to sink into the soft ground and why?

	boy more likely to sink	pressure on soft ground
<b>A</b>	X	larger than Y
<b>B</b>	X	smaller than Y
<b>C</b>	Y	larger than X
<b>D</b>	Y	smaller than X

- 14 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 to the volume of the trapped air as the pump handle is pushed in?

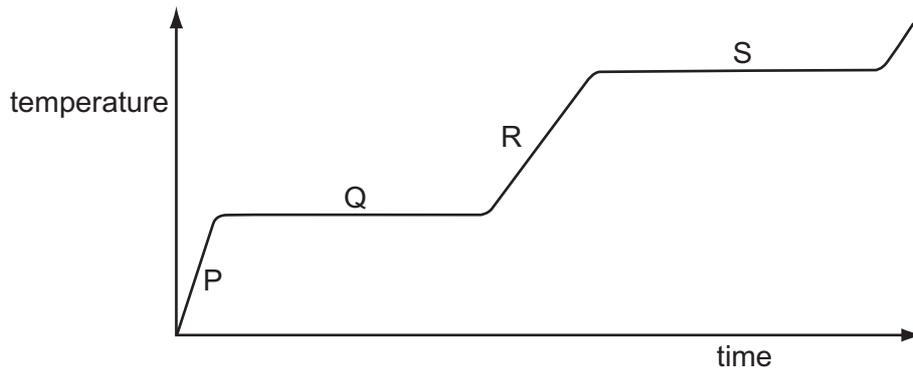
	pressure	volume
<b>A</b>	decreases	decreases
<b>B</b>	decreases	remains the same
<b>C</b>	increases	decreases
<b>D</b>	increases	remains the same

- 15 A balloon is inflated in a cold room. When the room becomes much warmer, the balloon becomes larger.

How does the behaviour of the air molecules in the balloon explain this?

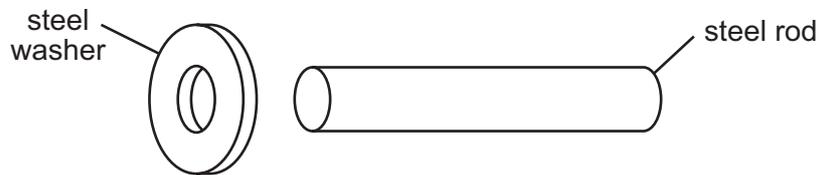
- A** The molecules become larger.
- B** The molecules evaporate.
- C** The molecules move more quickly.
- D** The molecules repel each other.

- 16 A substance is heated at a steady rate. It changes from a solid to a liquid, and then to a gas. The graph shows how its temperature changes with time.



Which parts of the graph show a change of state taking place?

- A P and R
  - B P and S
  - C Q and R
  - D Q and S
- 17 An engineer wants to fix a steel washer on to a steel rod. The rod is just too big to fit into the hole of the washer.



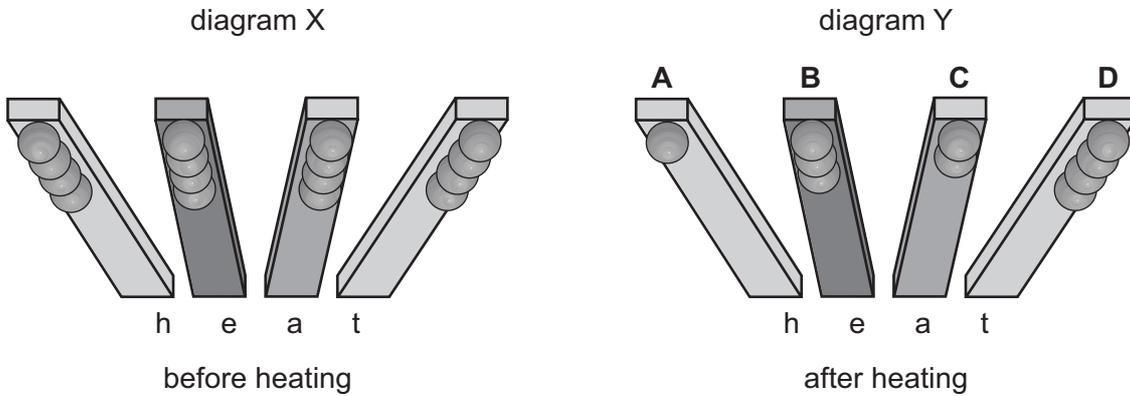
How can the engineer fit the washer onto the rod?

- A cool the washer and put it over the rod
- B cool the washer and rod to the same temperature and push them together
- C heat the rod and then place it in the hole
- D heat the washer and place it over the rod

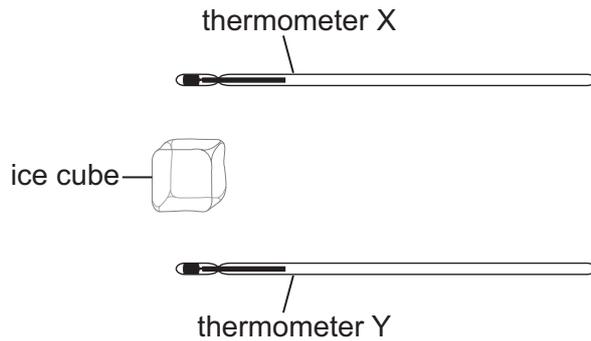
18 An experiment is set up to find out which metal is the best conductor of heat. Balls of wax are attached to rods made from different metals, as shown in diagram X.

The rods are heated at one end. Some of the balls fall off, leaving some as shown in diagram Y.

Which labelled metal is the best conductor of heat?



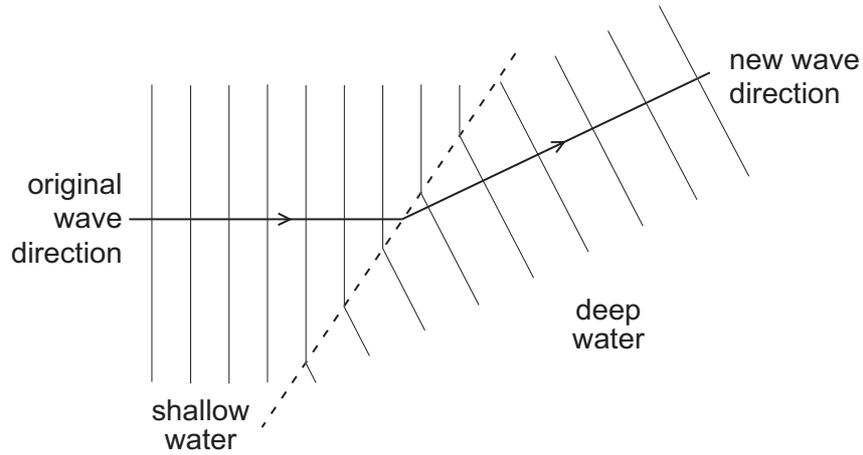
19 Thermometer X is held above an ice cube and thermometer Y is held the same distance below the ice cube. After several minutes, the reading on one thermometer changes. The ice cube does not melt.



Which thermometer reading changes and why?

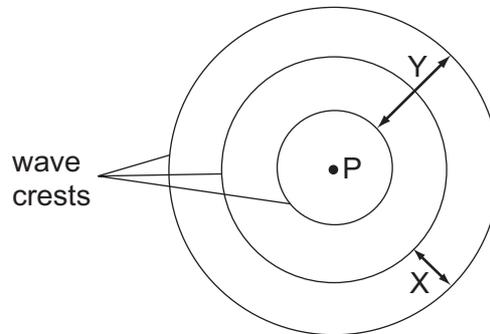
	thermometer	reason
<b>A</b>	X	cool air rises from the ice cube
<b>B</b>	X	warm air rises from the ice cube
<b>C</b>	Y	cool air falls from the ice cube
<b>D</b>	Y	warm air falls from the ice cube

- 20 Water waves change direction when they move from shallow water to deep water.



What is the name of this effect?

- A diffraction
  - B dispersion
  - C reflection
  - D refraction
- 21 A vertical stick is dipped up and down in water at P. In two seconds, three wave crests are produced on the surface of the water.



Which statement is true?

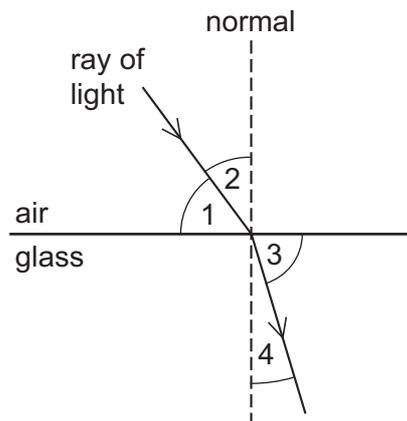
- A Distance X is the amplitude of the waves.
- B Distance Y is the wavelength of the waves.
- C Each circle represents a wavefront.
- D The frequency of the waves is 3 Hz.

22 A plane mirror is on a wall.

Which is a correct description of the image formed by the mirror?

- A the right way up and smaller than the object
- B the right way up and the same size as the object
- C upside down and smaller than the object
- D upside down and the same size as the object

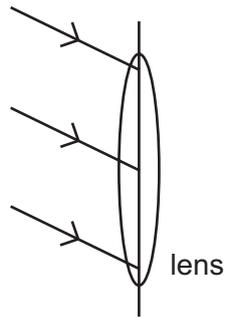
23 The diagram shows a ray of light entering a block of glass.



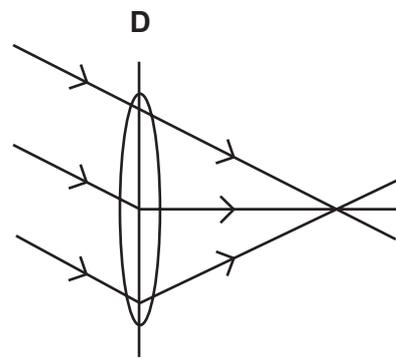
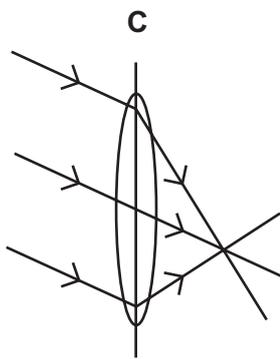
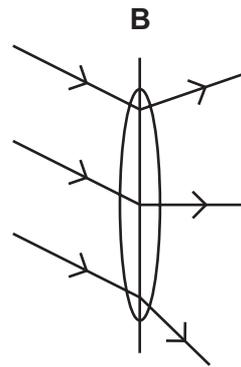
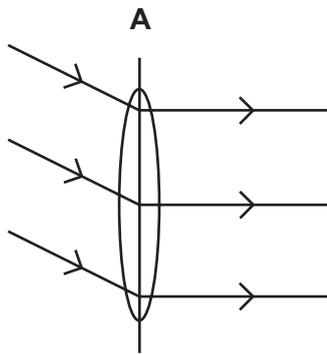
Which numbered angles are the angles of incidence and of refraction?

	angle of incidence	angle of refraction
<b>A</b>	1	3
<b>B</b>	1	4
<b>C</b>	2	3
<b>D</b>	2	4

24 Three rays of light fall on a converging lens as shown.



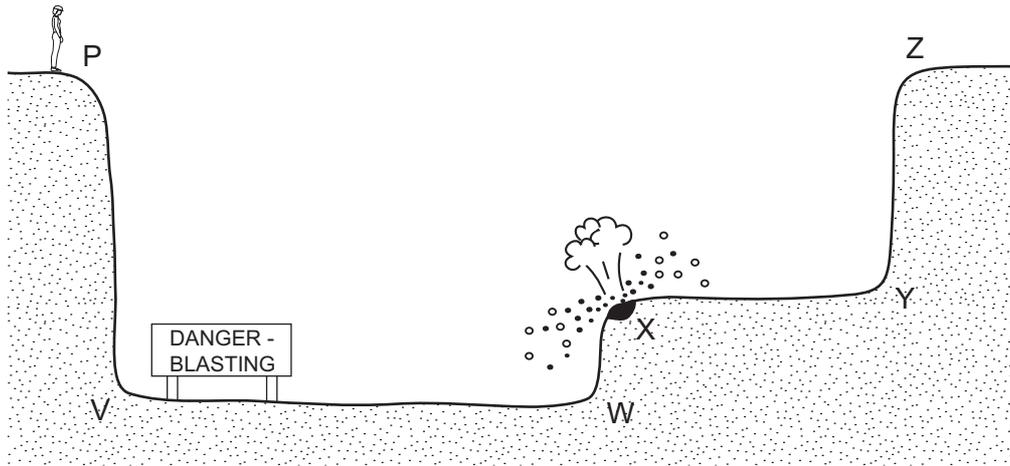
Which diagram shows the path of the rays after passing through the lens?



25 Which type of wave **cannot** travel through a vacuum?

- A infra-red radiation
- B microwaves
- C sound waves
- D X-rays

26 An engineer standing at P hears the sound of an explosion at X.



After the explosion, she hears two bangs. One bang is heard a fraction of a second after the other.

The second bang is an echo from

- A XY.
- B PV.
- C ZY.
- D WX.

27 How can a permanent magnet be demagnetised?

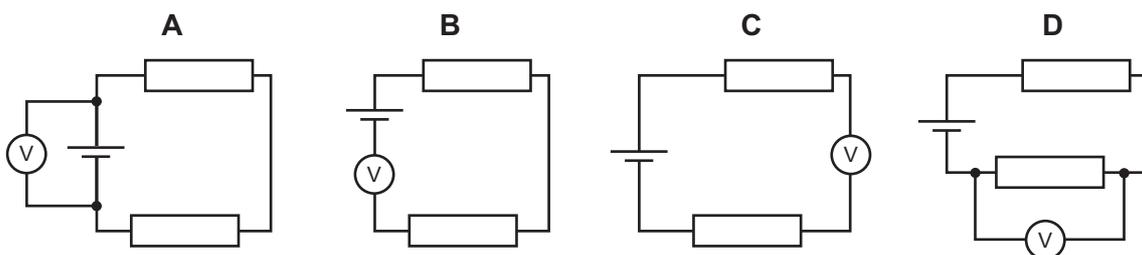
- A cool the magnet for a long time
- B hit the magnet repeatedly with a hammer
- C leave the magnet in a coil which carries direct current
- D pass a small current through the magnet

28 An electromagnet is used to separate magnetic metals from non-magnetic metals.

Why is steel unsuitable as the core of the electromagnet?

- A It is a good conductor of electricity.
- B It forms a permanent magnet.
- C It has a high density.
- D It has a high thermal capacity.

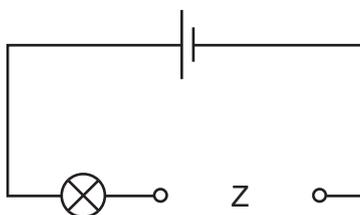
- 29 Which circuit shows how a voltmeter is connected to measure the potential difference across a cell?



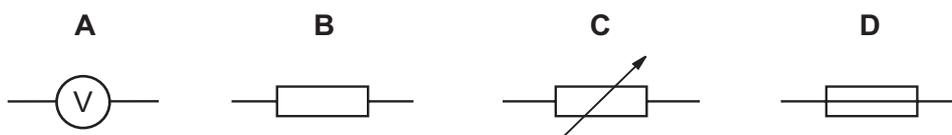
- 30 A polythene rod repels an inflated balloon hanging from a nylon thread.

What charges must the rod and the balloon carry?

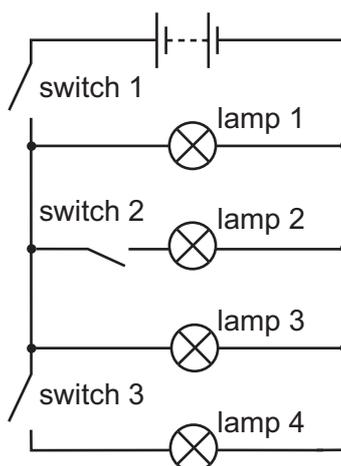
- A** The rod and the balloon carry opposite charges.  
**B** The rod and the balloon carry like charges.  
**C** The rod is charged but the balloon is not.  
**D** The balloon is charged but the rod is not.
- 31 An electrical component is to be placed in the circuit at Z, to allow the brightness of the lamp to be varied from bright to dim.



What should be connected at Z?



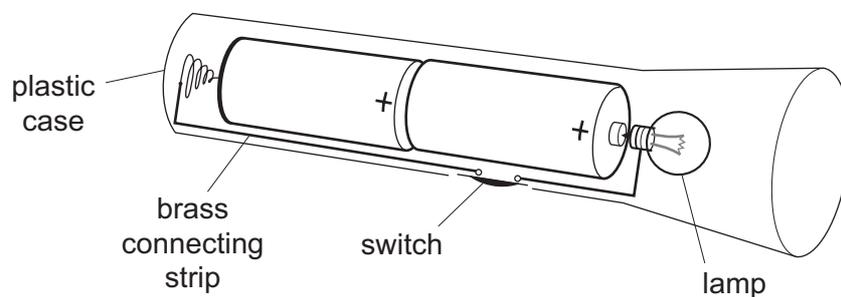
32 The circuit shown contains four lamps and three switches.



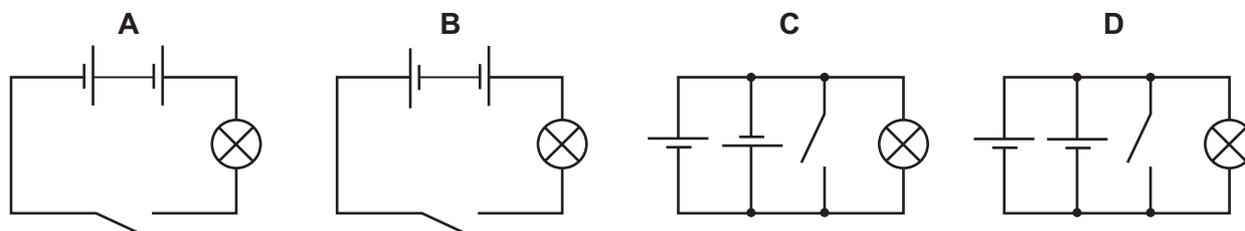
Which switches must be closed to light only lamps 1 and 3?

- A switch 1 only
- B switch 1 and switch 2 only
- C switch 1 and switch 3 only
- D switch 2 and switch 3 only

33 The diagram shows a torch containing two 2 V cells, a switch and a lamp.



What is the circuit diagram for the torch?

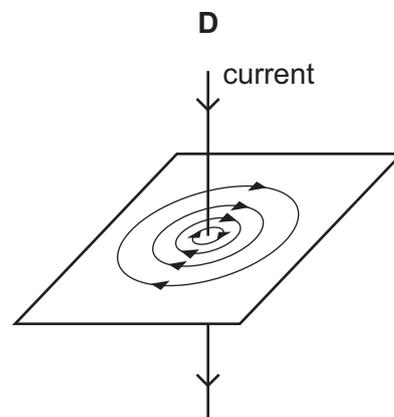
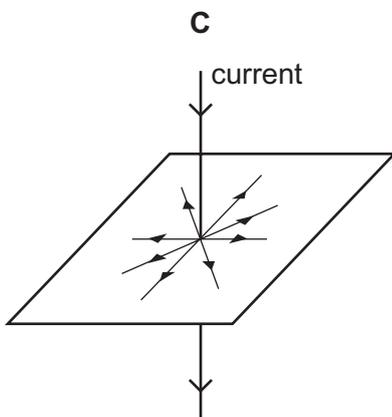
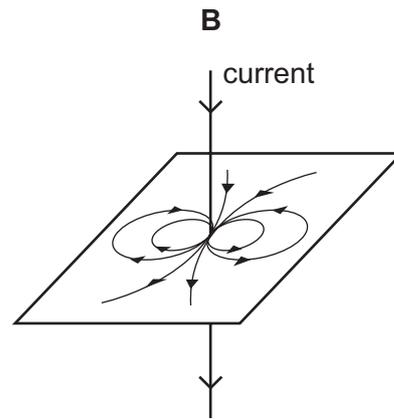
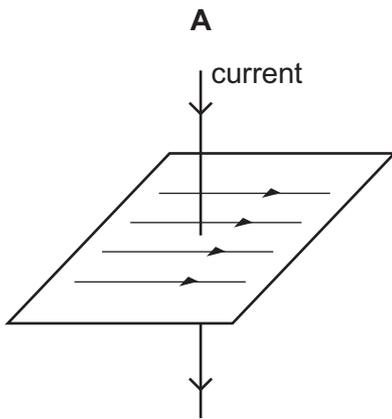


34 Which statement is correct?

- A A fuse is included in a circuit to prevent the current becoming too high.
- B A fuse should be connected to the neutral wire in a plug.
- C An electric circuit will only work if it includes a fuse.
- D An earth wire is needed to prevent the fuse blowing.

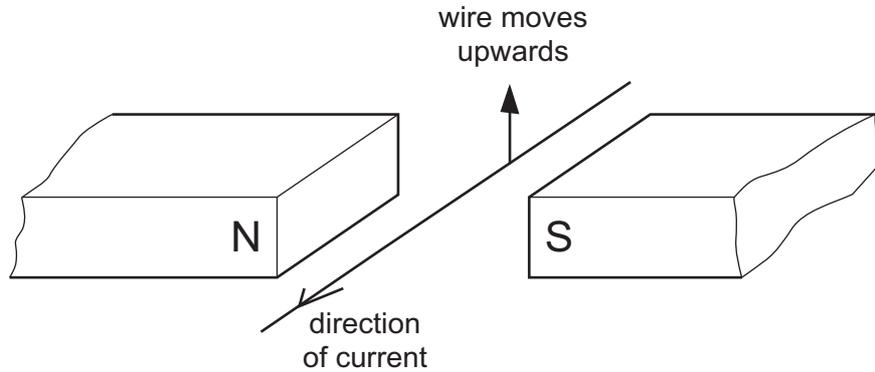
35 A straight wire carrying a current produces a magnetic field.

Which diagram shows the correct shape of the field?



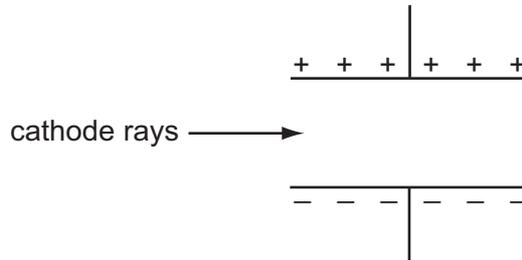
- 36 A student carries out an experiment to see the effect of a magnetic field on a wire carrying current.

The wire moves upwards as shown.



What should the student do to make the wire move downwards?

- A change the direction of the current
  - B move the poles of the magnet closer together
  - C send a smaller current through the wire
  - D use a stronger magnet
- 37 A beam of cathode rays passes through an electric field between two parallel plates.



In which direction is the beam deflected?

- A into the page
- B out of the page
- C towards the bottom of the page
- D towards the top of the page

38 Which line correctly describes  $\alpha$ -particles?

	electric charge	penetrates 1 cm of aluminium?
<b>A</b>	negative	yes
<b>B</b>	negative	no
<b>C</b>	positive	yes
<b>D</b>	positive	no

39 A small amount of a radioactive isotope contains 72 billion unstable nuclei. The half-life of the isotope is 4 hours.

How many unstable nuclei would remain after 12 hours?

- A** 6 billion
- B** 9 billion
- C** 18 billion
- D** 24 billion

40 How many nucleons are in a nucleus of  ${}_{19}^{39}\text{K}$  ?

- A** 19
- B** 20
- C** 39
- D** 58



