

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

PHYSICS

0625/1

PAPER 1 Multiple Choice

Wednesday

15 MAY 1996

Morning

45 minutes

Additional materials:

Electronic calculator and/or Mathematical tables

Multiple Choice answer sheet

Soft clean eraser

Soft pencil (type B or HB is recommended)

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 in 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 very carefully the Instructions on the answer sheet.

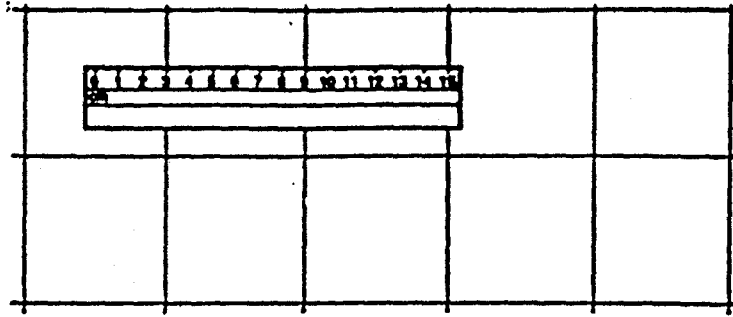
INFORMATION FOR CANDIDATES

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

Any rough working should be done in this booklet.

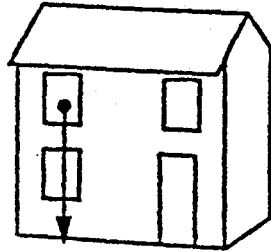
This question paper consists of 19 printed pages and 1 blank page.

- 1 A floor is covered with square tiles. The diagram shows a ruler on the tiles.



How long is one tile?

- A 3 cm B 6 cm C 9 cm D 12 cm
- 2 A tennis ball falls from the upstairs window of a house.

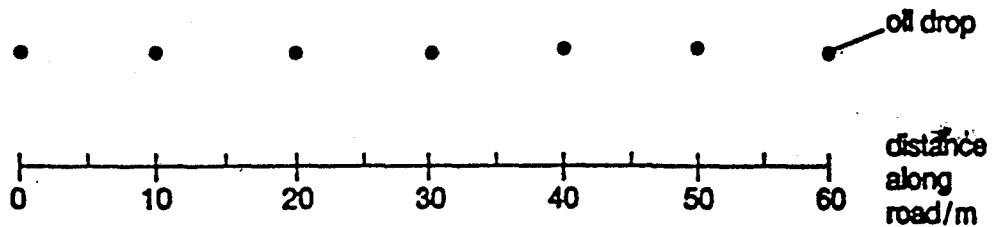


What can be said about the acceleration of the ball if air resistance can be ignored?

- A It depends on the density of the ball.
B It depends on the mass of the ball.
C It increases as the ball falls.
D It stays the same as the ball falls.

- 3 A car drips oil on to the road at a rate of one drop every second.

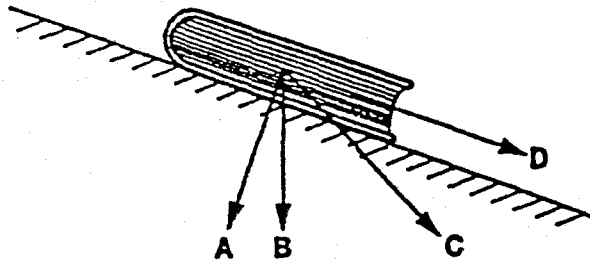
A student measures the distance between oil drops and draws the diagram shown.



Which statement about the motion of the car is correct?

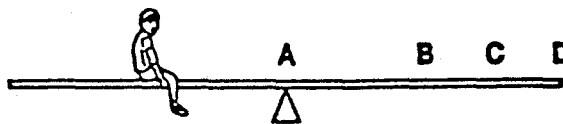
- A The acceleration is constant.
 - B The acceleration increases.
 - C The speed is constant.
 - D The speed increases.
- 4 The diagram shows a book resting on a slope.

In which direction does the weight of the book act?



- 5 A boy sits on a plank which has a pivot in the middle.

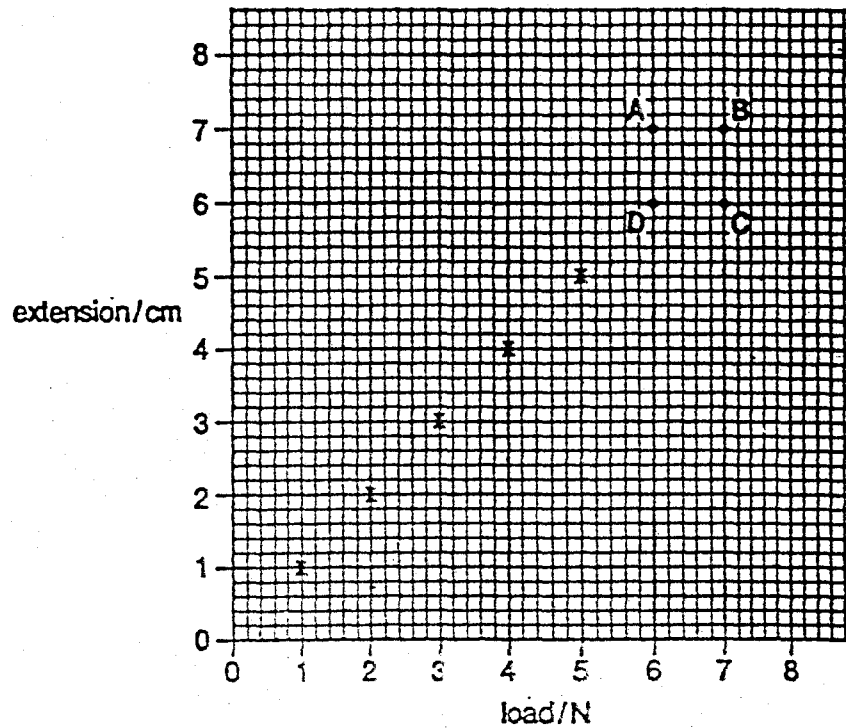
Where should a girl, of the same weight, sit to balance the plank?



- 6 Five extensions of a spring are measured and plotted against load.

When the load is 6 N, the extension is 7 cm.

Where should this point be plotted?



- 7 The energy which the Sun gives out comes from

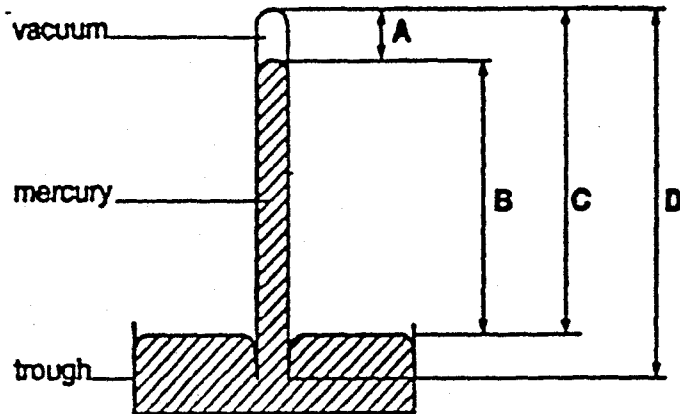
- A the chemical energy of its atoms.
- B the nuclear energy of its atoms.
- C the energy due to its distance from the Earth.
- D the energy due to its speed of motion.

- 8 An electric fire changes electrical energy into

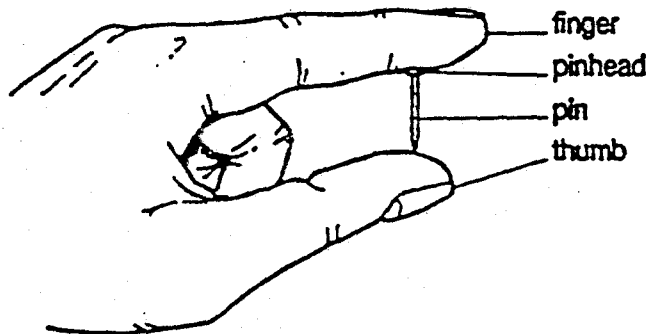
- A chemical energy.
- B gravitational energy.
- C heat energy.
- D sound energy.

9 The diagram shows a simple barometer.

Which distance should be measured to find the atmospheric pressure?



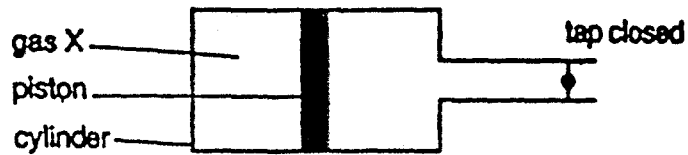
10 A pin is squeezed between the finger and thumb.



Which statement is correct?

- A The force of the pin is larger on the finger than on the thumb.
- B The force of the pin is larger on the thumb than on the finger.
- C The pressure of the pin is larger on the finger than on the thumb.
- D The pressure of the pin is larger on the thumb than on the finger.

- 11 A cylinder with a tap contains a fixed mass of gas X. The gas is contained by a piston which can move towards or away from the tap.



When the tap is opened, the piston moves slightly to the right, towards the tap.



What can be deduced about the pressure of gas X?

pressure of gas X

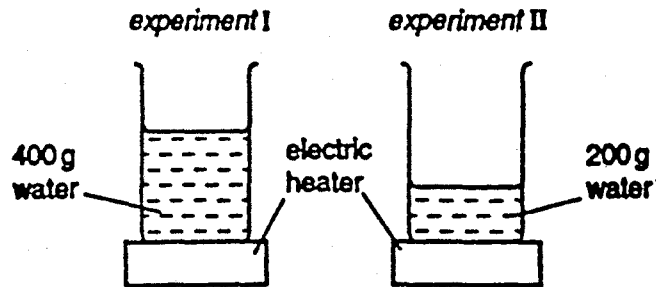
- | | <i>before opening tap</i> | <i>after opening tap</i> |
|---|--------------------------------|--------------------------------|
| A | less than atmospheric pressure | more than atmospheric pressure |
| B | same as atmospheric pressure | more than atmospheric pressure |
| C | more than atmospheric pressure | same as atmospheric pressure |
| D | more than atmospheric pressure | less than atmospheric pressure |

- 12 Which statement best describes the molecules in a gas?

- A They are close together and moving about slowly.
- B They are close together and moving about quickly.
- C They are far apart and moving about quickly.
- D They are far apart and moving about slowly.

- 13 In experiment I, 400 g of water at 20 °C were heated as shown. After two minutes, the temperature had risen to 50 °C.

Then, in experiment II, 200 g of water at 20 °C were heated using the same heater.

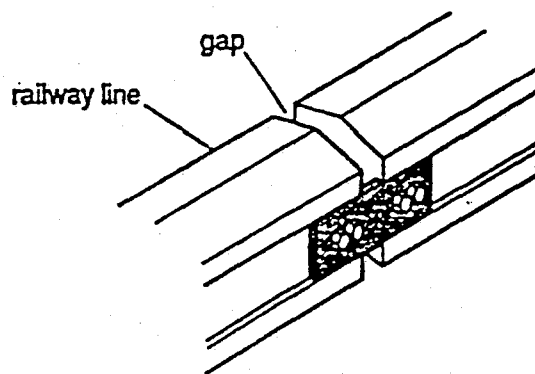


What is the most likely temperature of the water in experiment II after it had been heated for two minutes?

- A 30 °C B 40 °C C 80 °C D 100 °C
- 14 An ice cube at a temperature of 0 °C is put into a drink at a temperature of 10 °C.
- After a short time during cooling, some of the ice has melted and the drink has cooled to a temperature of 8 °C.

What is the temperature of the remaining ice?

- A 0 °C B 2 °C C 4 °C D 8 °C
- 15 Metal railway lines are often laid in sections with small gaps in between, as shown.



What is the reason for leaving the gaps?

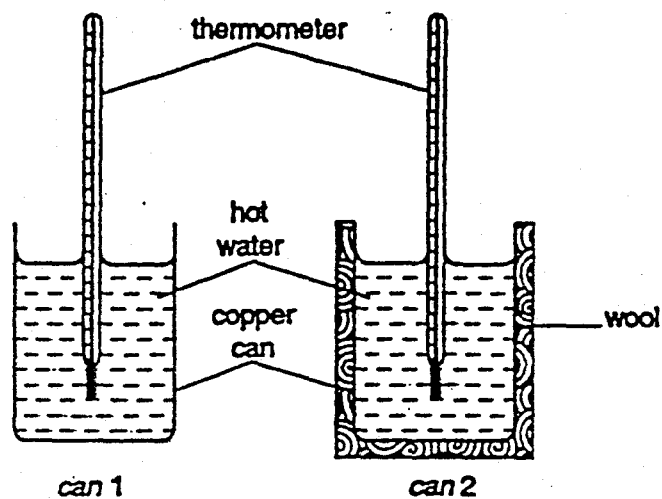
- A to allow for contraction when the temperature falls
 B to allow for expansion when the temperature rises
 C to prevent electric currents from flowing along the rails
 D to stop large vibrations

16 Why are the handles of cooking pots often made of wood or plastic?

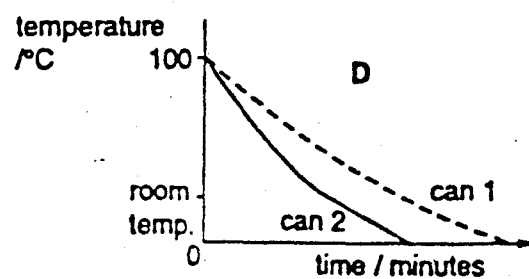
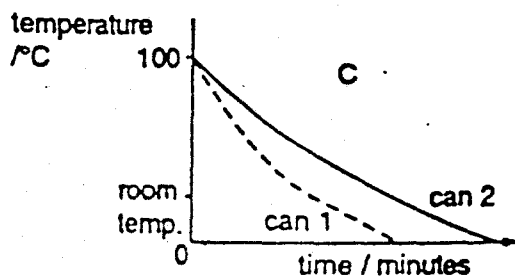
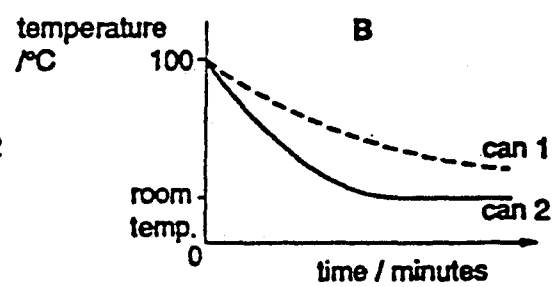
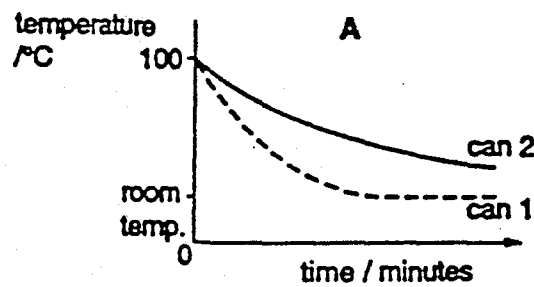
Wood and plastic are

- A good conductors of heat.
- B poor conductors of heat.
- C good conductors of electricity.
- D poor conductors of electricity.

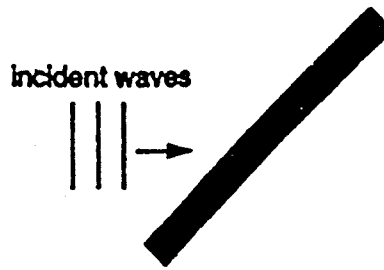
17 Two copper cans were filled with boiling water, as shown. One can was insulated with wool. The temperature of the water in each can was taken every minute.



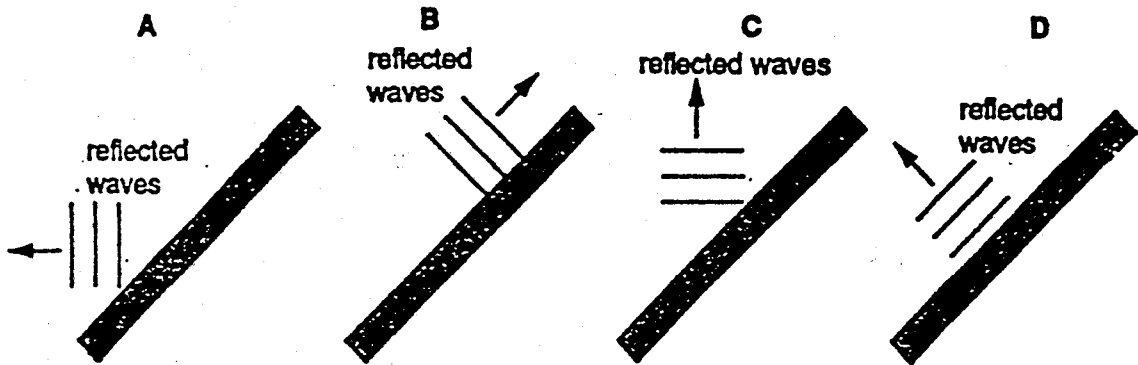
Which graph shows the results obtained?



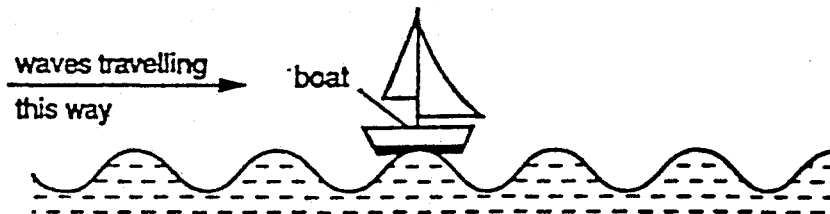
18 Parallel water waves approach a barrier in a water tank.



Which diagram correctly shows the waves after they have been reflected by the barrier?



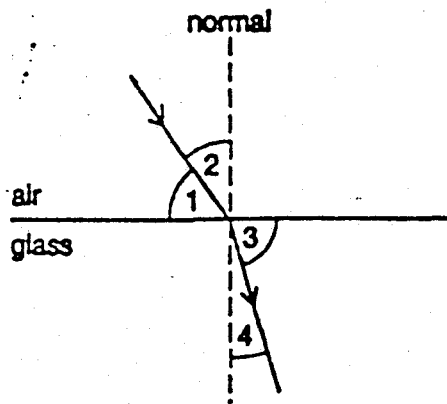
19 Transverse waves are moving past a small boat on a lake.



Which way do the waves make the boat move?

- A → to the right
- B ← to the left
- C ⇄ backwards and forwards
- D ↑↓ up and down

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

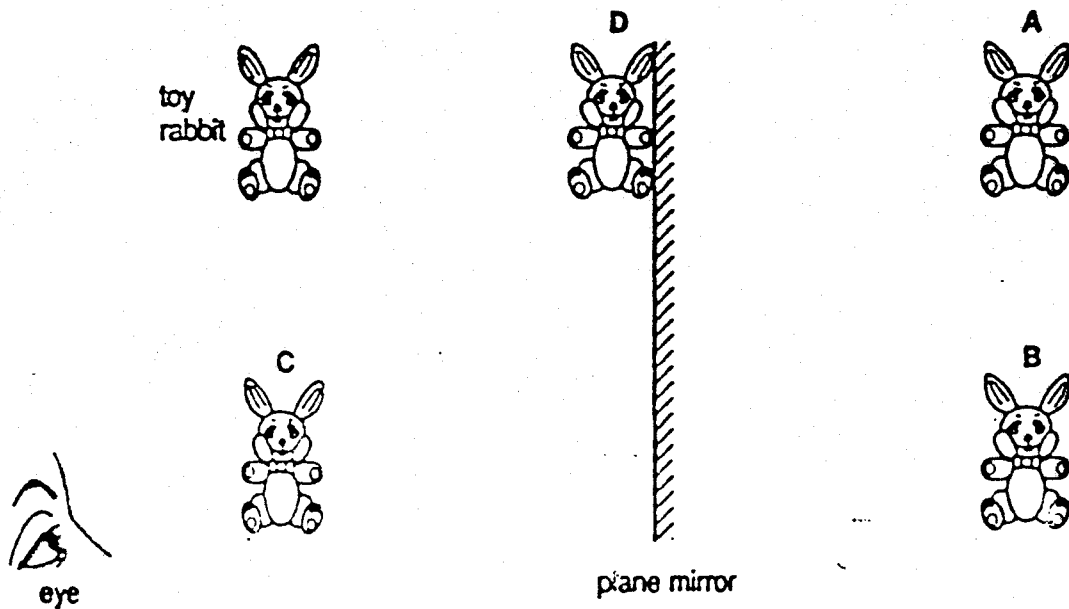


Which numbered angles are the angles of incidence and refraction?

	angle of incidence	angle of refraction
A	1	2
B	1	4
C	2	3
D	2	4

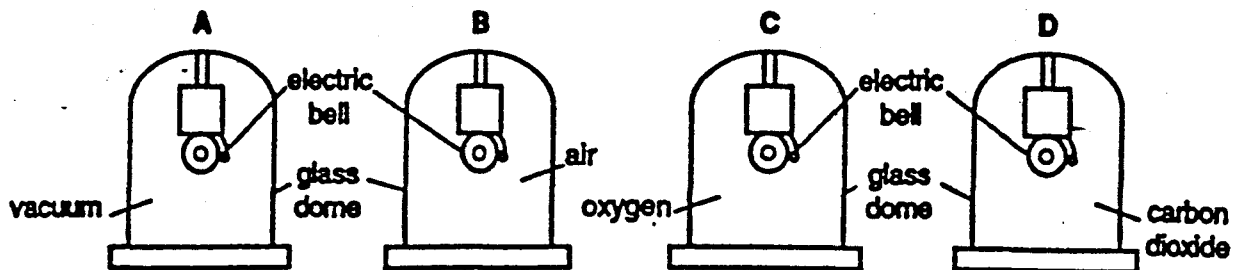
21 The diagram shows the position of the eye of a person looking at the reflection of a toy rabbit in a plane mirror.

At which position is the image seen?



22 An electric bell is ringing inside a glass dome.

In which situation would the bell sound the quietest?



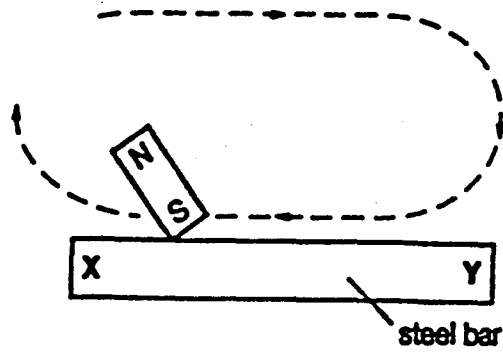
23 Which pair of measurements is needed to calculate the speed of sound?

- A force and temperature
- B pressure and time
- C temperature and distance
- D time and distance

24 Which method would be the best to demagnetise an iron rod?

- A pass the rod through a coil connected to an a.c. supply
- B pass the rod through a coil connected to a d.c. supply
- C place the rod next to another magnet
- D stroke the rod with another magnet

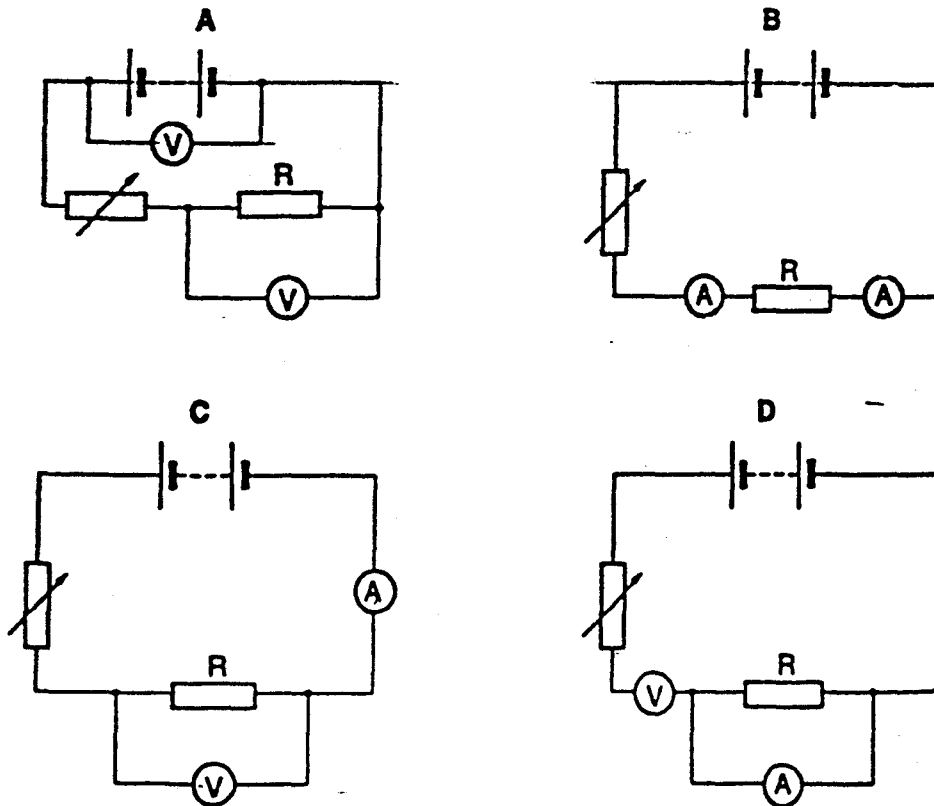
25 A steel bar is magnetised by stroking it several times with the south pole of a magnet, as shown.



Which poles are formed at X and Y?

- | | X | Y |
|---|-------|-------|
| A | north | north |
| B | north | south |
| C | south | north |
| D | south | south |

26 Which circuit could be used to find the resistance of R?



27 In which unit is potential difference measured?

- A ampere
- B ohm
- C volt
- D watt

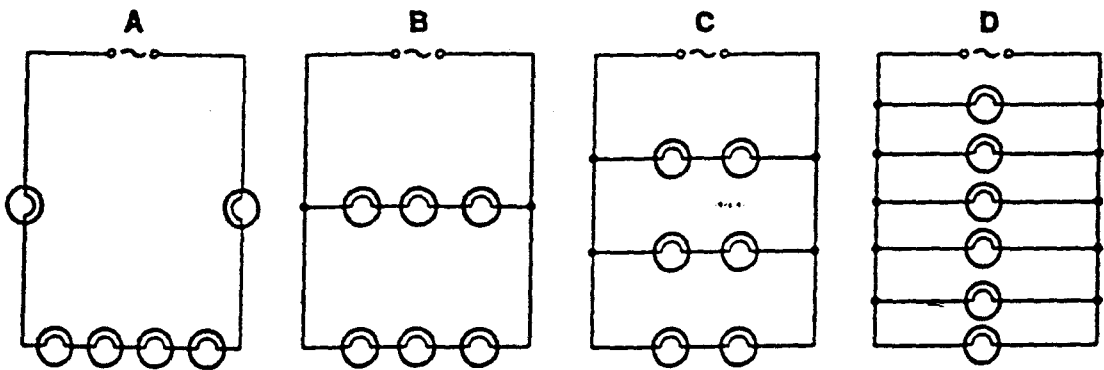
28 Four wires are all made from the same material.

Which wire has the greatest resistance?

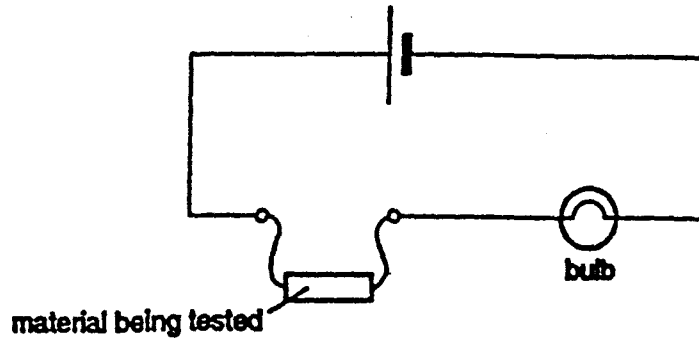
wire	length of wire / cm	diameter of wire / mm
A	50	0.1
B	50	0.2
C	100	0.1
D	100	0.2

29 Six electric light bulbs are used to decorate a festive tree.

Which circuit would make sure that, if one bulb failed, the others would all stay alight?



- 30 Susan does an experiment to find out if some materials are electrical conductors or insulators. She uses the circuit shown.



Something has gone wrong with one test in her experiment.

Which test is incorrect?

<i>test material</i>	<i>does the bulb light?</i>	<i>conductor or insulator</i>
A copper	yes	conductor
B paper	no	insulator
C plastic	no	insulator
D wood	yes	conductor

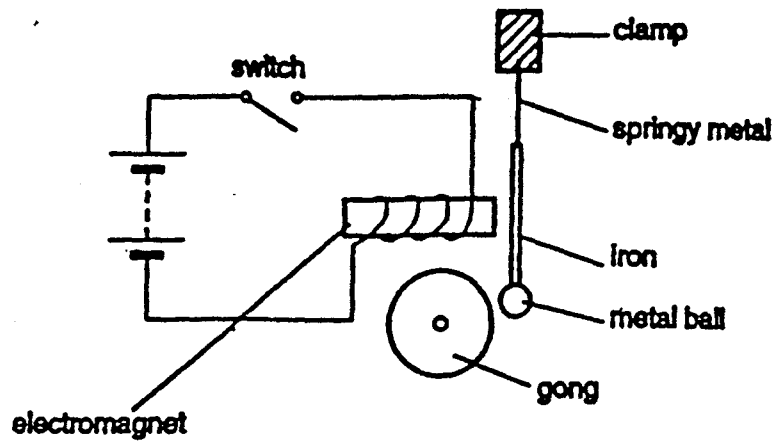
- 31 The diagram shows the structure of a fuse.



What is the purpose of wire X?

- A to earth the appliance
- B to increase the resistance of the circuit
- C to keep the end caps on
- D to melt when the current becomes too large

- 32 A student tries to make an electric bell using the design shown.



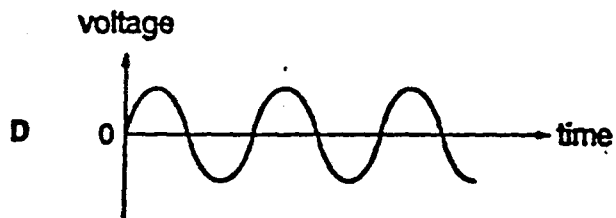
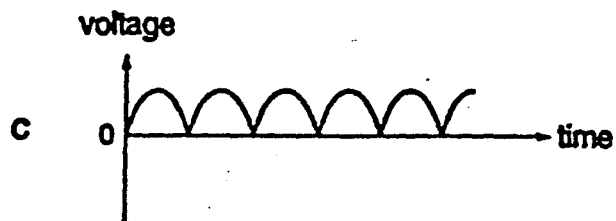
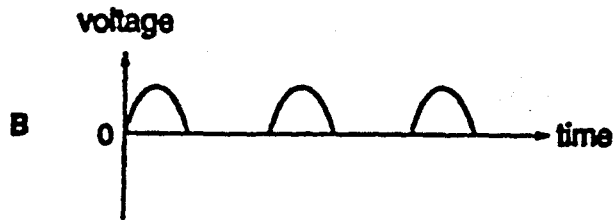
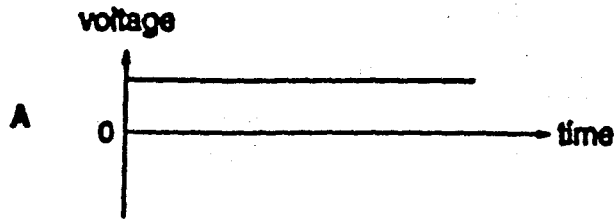
What happens when the switch is closed?

- A The ball does not hit the gong at all.
 - B The ball hits the gong once only.
 - C The ball hits the gong every few seconds.
 - D The ball hits the gong many times each second.
- 33 When electrical energy is transmitted over large distances, a high voltage is used.

Why is this better than using a low voltage?

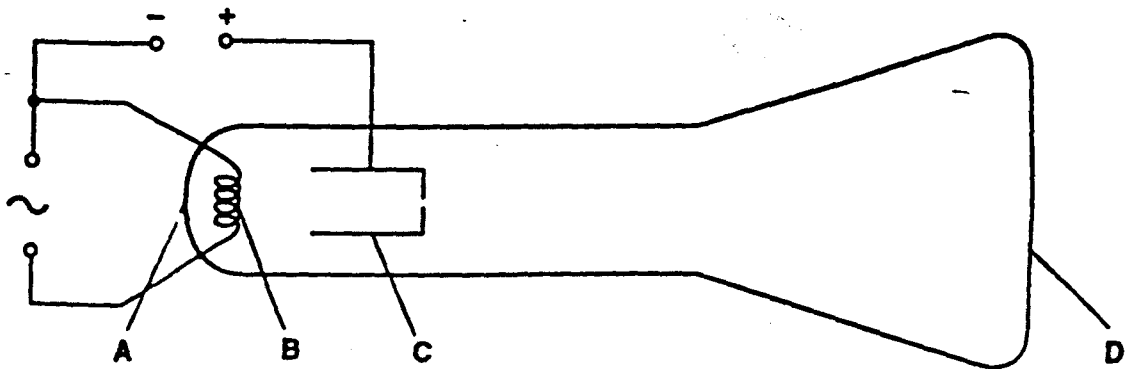
- A The cables do not become so warm.
- B There is a greater current in the cable.
- C There is less chance of electric shock.
- D Thicker cables can be used.

34 Which graph shows the output from a simple a.c. generator?

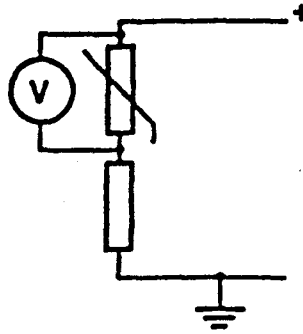


35 The diagram shows a simple cathode-ray tube.

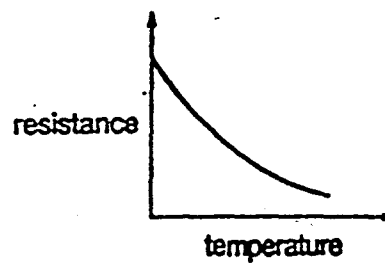
Which part emits the electrons?



- 36 The diagram shows a thermistor connected in a potential divider. A voltmeter is connected across the thermistor.



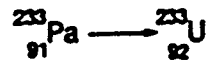
The graph shows the variation of the resistance of the thermistor with temperature.



As the thermistor becomes cooler, what happens to its resistance and to the reading on the voltmeter?

- | | <i>resistance</i> | <i>voltmeter reading</i> |
|---|-------------------|--------------------------|
| A | falls | falls |
| B | falls | rises |
| C | rises | falls |
| D | rises | rises |

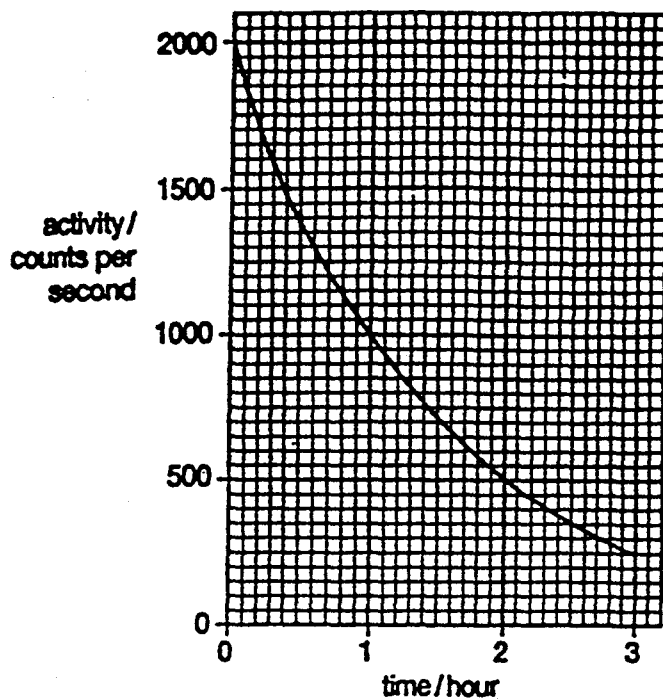
- 37 A radioactive decay can be represented as shown.



In this decay, the nucleus changes by

- A absorbing a neutron.
- B absorbing a proton.
- C emitting an α -particle.
- D emitting a β -particle.

38 The graph shows the activity of a radioactive source over a period of time.

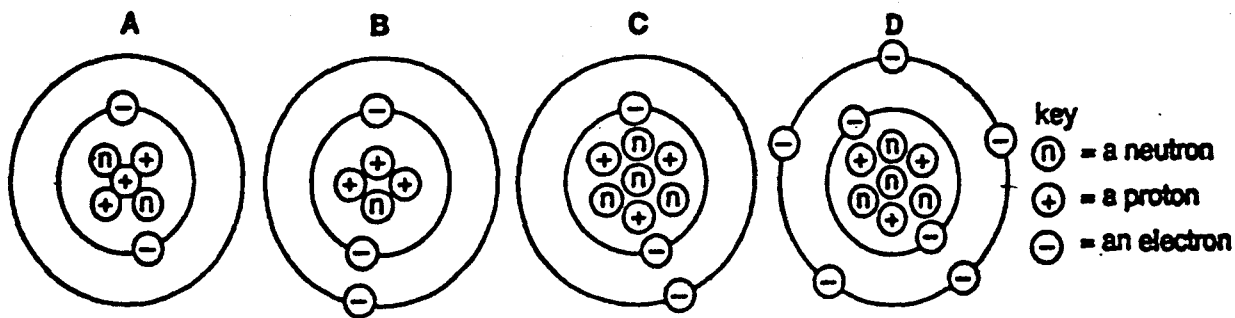


What is the half-life of the source?

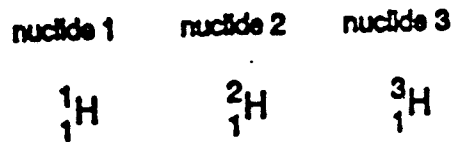
- A $\frac{1}{2}$ hour B 1 hour C $1\frac{1}{2}$ hours D 3 hours

39 An atom of the element lithium has a nucleon (mass) number of 7 and a proton (atomic) number of 3.

Which diagram represents an atom of lithium?



40. There are three nuclides of hydrogen.



Which of these nuclides have the same number of protons in their nuclei?

- A 1 and 2 only
- B 2 and 3 only
- C all of them
- D none of them