

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

PHYSICS

0625/1

PAPER 1 Multiple Choice

Tuesday 15 NOVEMBER 1994

Morning

45 minutes

Additional materials:

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 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.

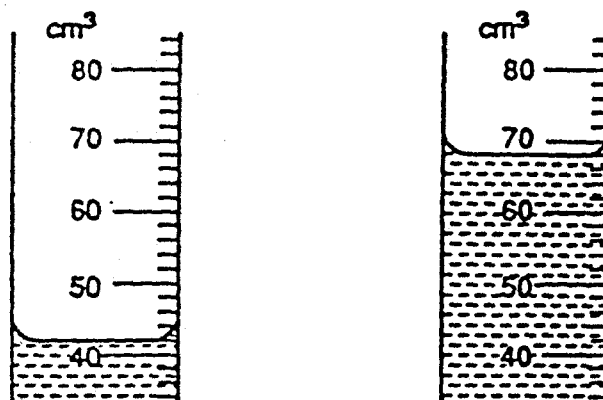
Read very carefully the instructions on the answer sheet.

INFORMATION FOR CANDIDATES

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

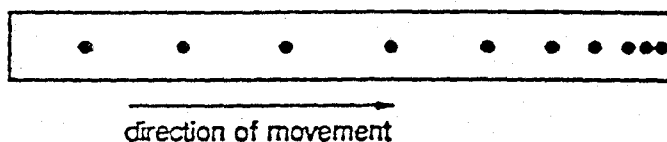
- 1 Several lumps of ice are added to a measuring cylinder containing water and are allowed to melt.

The diagrams show the liquid level before the ice is added and after it has melted.



What is the volume of the melted ice?

- A 68 cm³ B 64 cm³ C 26 cm³ D 23 cm³
- 2 The diagram shows the pattern on a road due to oil dripping at a constant rate from a moving car.

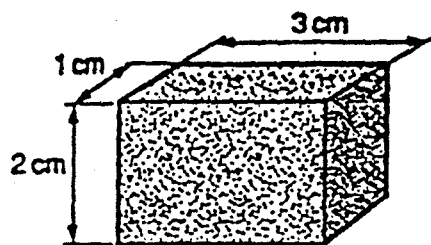


Which statement describes the motion of the car?

- A It accelerated and then slowed down.
 B It accelerated from rest.
 C It moved at a steady speed and then accelerated.
 D It moved at a steady speed and then slowed down.
- 3 What is the weight of an object?

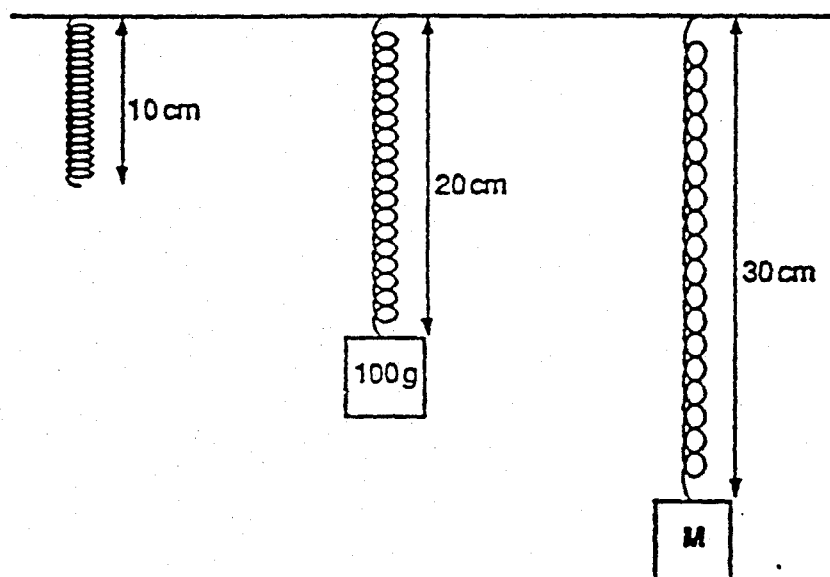
- A The force of gravity on the object.
 B The mass of the object.
 C The mass of the object divided by the volume.
 D The total number of particles in the object.

- 4 The diagram shows a rectangular block made of a material which has a density of 2 g/cm^3 .



What is the mass of the block?

- A 2g B 3g C 8g D 12g
- 5 The diagram shows how much a 10-cm spring stretches when objects of different masses are hung on it.

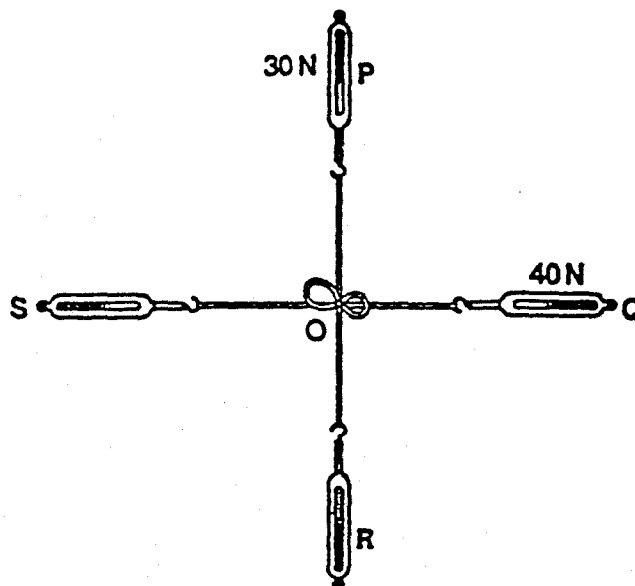


The extension of the spring is proportional to the mass hung on it.

What is the mass of object M?

- A 110g B 150g C 200g D 300g

- 6 The diagram shows four forcemeters (spring balances) joined together by pieces of string with a knot at O. The strings are at 90° to each other.

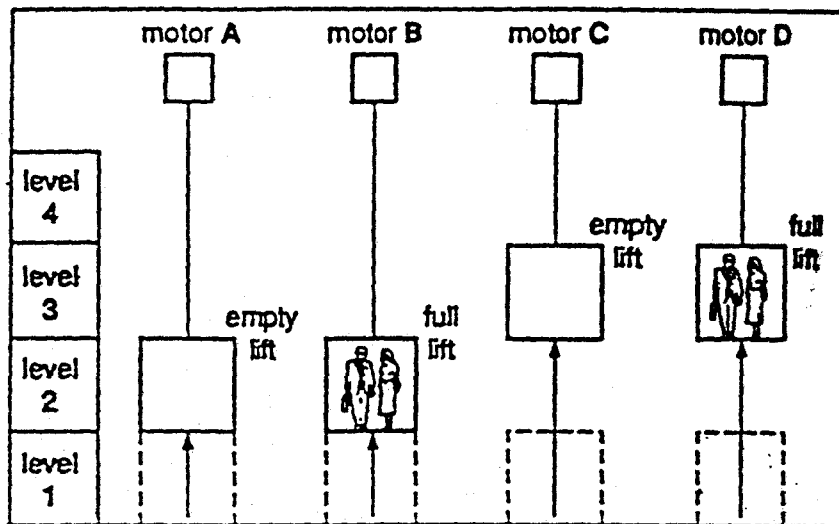


If O does not move and the readings on P and Q are as shown, what are the readings on R and S?

- | | R | S |
|---|------|------|
| A | 0 N | 70 N |
| B | 30 N | 40 N |
| C | 40 N | 30 N |
| D | 70 N | 0 N |
- 7 When a battery is connected in a bicycle lamp, what is the main change of energy within the battery?
- A chemical energy to electrical energy
 - B electrical energy to chemical energy
 - C electrical energy to energy of motion
 - D energy of motion to chemical energy
- 8 Which of the following is a unit of power?
- A joule
 - B kilogram
 - C newton
 - D watt

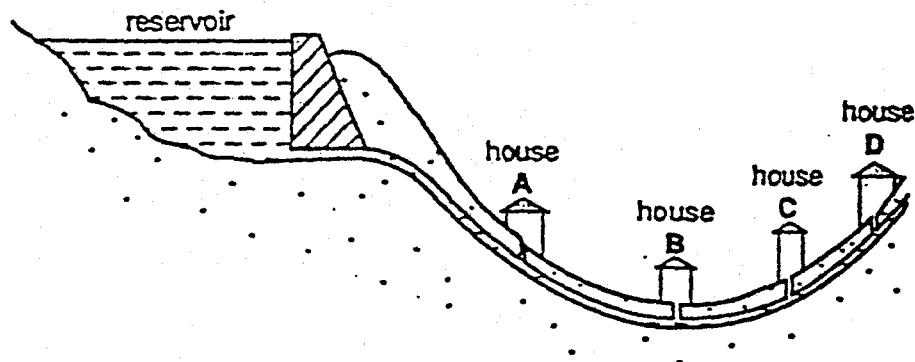
- 9 The diagram shows four lifts moving up from level 1.

Which motor has done the most work in moving the lift?



- 10 The diagram shows houses supplied with water from a storage reservoir.

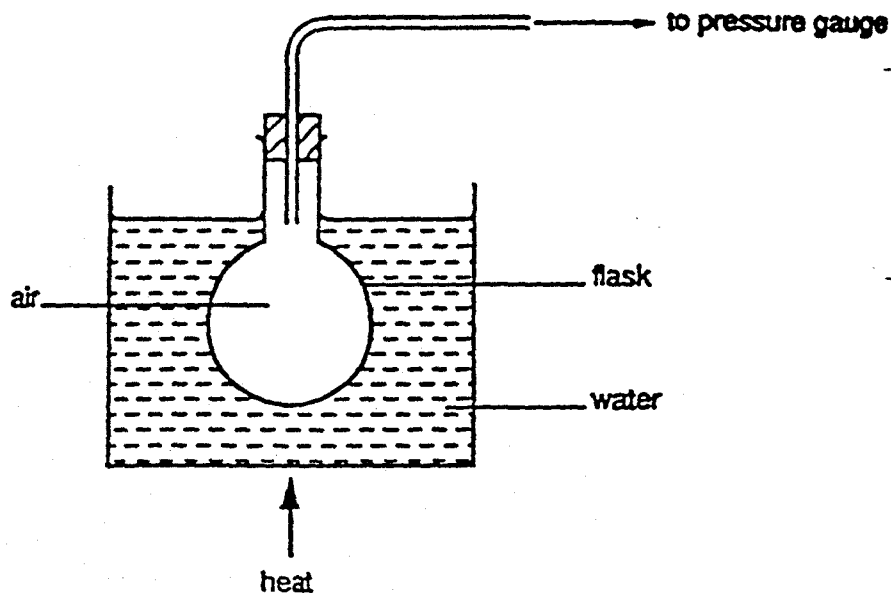
In which house would the water pressure be the highest?



- 11 What happens to the mass and temperature of a liquid when it evaporates quickly?

	mass	temperature
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

12 An experiment is set up as shown.



What does the pressure gauge show as the air in the flask gets hotter?

- A a steady reading
- B a decrease in pressure
- C an increase in pressure
- D an increase and then a decrease in pressure

13 A boy found that he could not unscrew the metal cap on a glass bottle. He held the cap in some hot water for about a minute and he was then able to unscrew the cap.

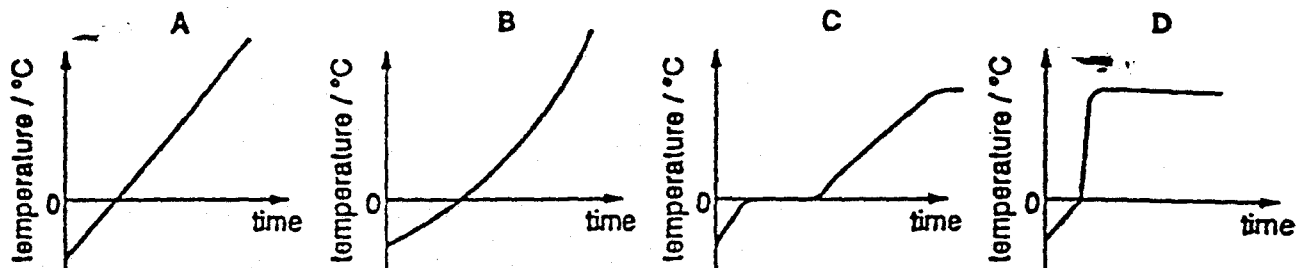
What happened in the hot water?

- A The cap contracted more than the neck of the bottle.
- B The cap expanded more than the neck of the bottle.
- C The neck of the bottle contracted more than the cap.
- D The neck of the bottle expanded more than the cap.

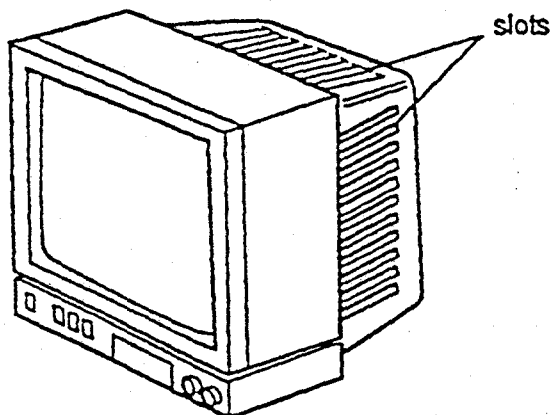
- 14 A student heats some ice in a beaker. The ice melts and the water eventually boils for a little while.

She plots a graph of temperature against time.

What does it look like?



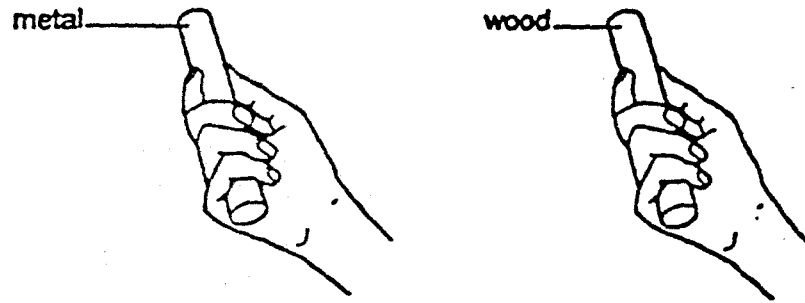
- 15 Televisions have slots in the casing because air must be allowed to circulate freely around the components in the back.



Why is this?

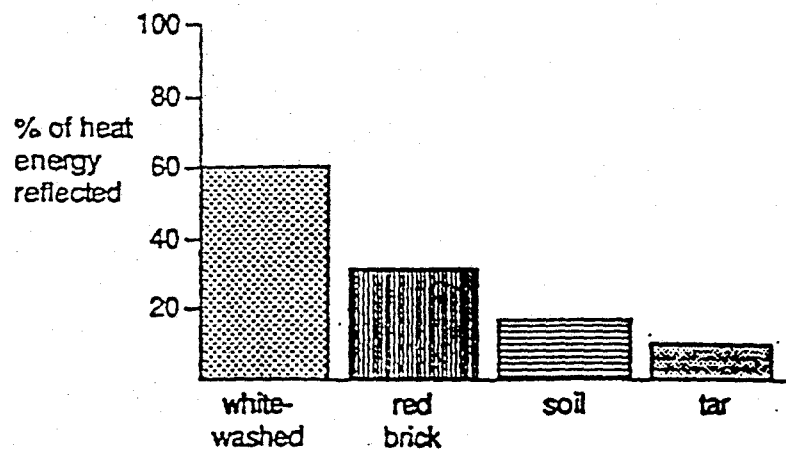
- A to aid convection
- B to aid evaporation
- C to prevent conduction
- D to prevent radiation

- 16 A piece of metal at 0°C feels colder to the touch than a piece of wood at the same temperature.



This is because the metal

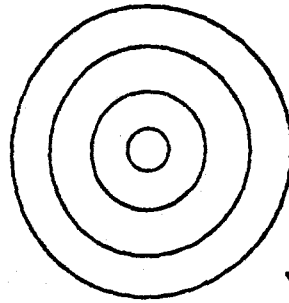
- A has a lower density than the wood.
 - B has a lower thermal capacity than the wood.
 - C is a better conductor than the wood.
 - D is a better insulator than the wood.
- 17 Different surfaces reflect different proportions of the Sun's radiant energy. The chart shows the percentage of heat energy which is reflected by some surfaces.



Which is the best way to treat a flat roof so as to reduce the amount of heat absorbed by the roof?

- A to cover it with a layer of red brick dust
- B to cover it with a layer of soil
- C to paint it with whitewash
- D to paint it with tar

- 18 A drop of water from a tap falls on to the surface of some water of constant depth.



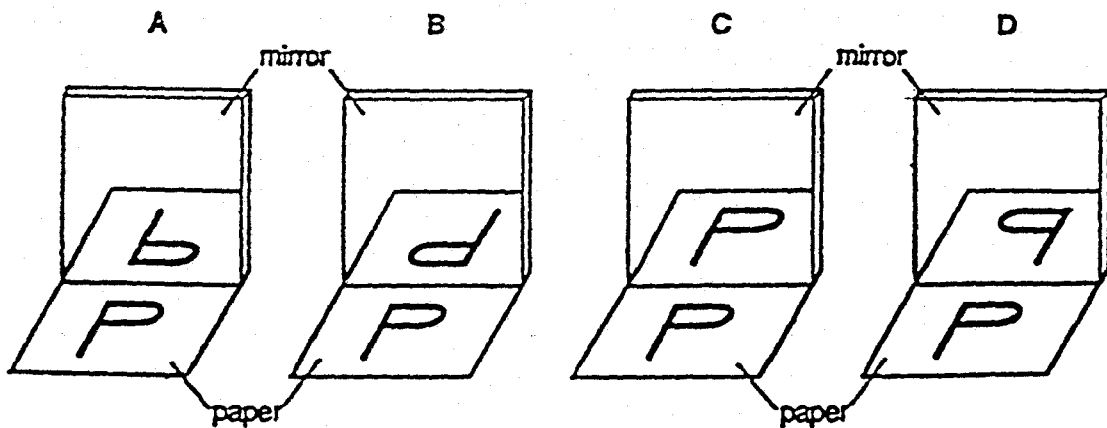
view from above

Water waves spread out on the surface of the water.

Which statement is true?

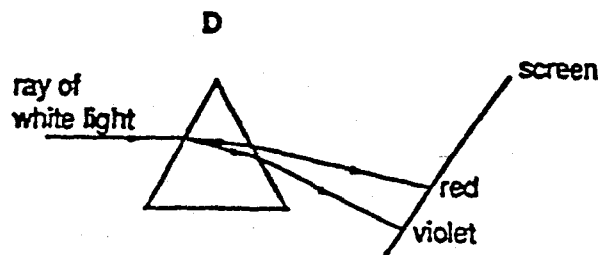
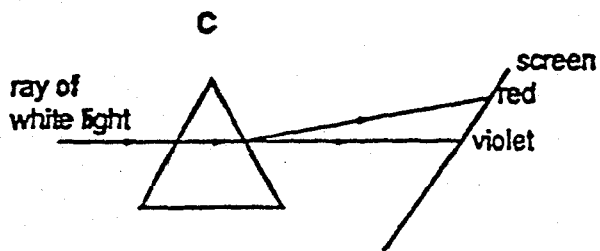
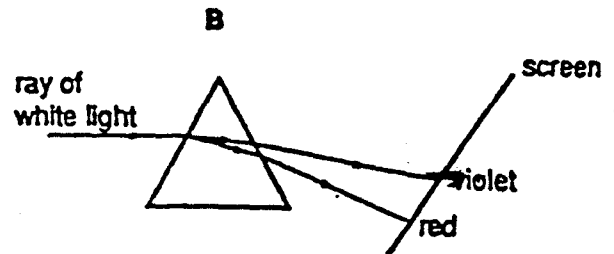
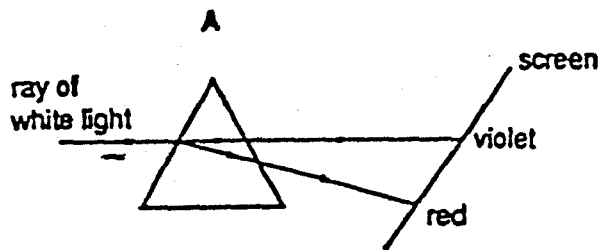
- A The waves are transverse and travel at the same speed in all directions.
 - B The waves are transverse and travel faster in one direction than others.
 - C The waves are longitudinal and travel at the same speed in all directions.
 - D The waves are longitudinal and travel faster in one direction than others.
- 19 A student looks at the reflection in a mirror of a letter P on a piece of paper.

Which of the following does he see?



20 A ray of white light enters a triangular, glass prism.

Which ray diagram is correct?

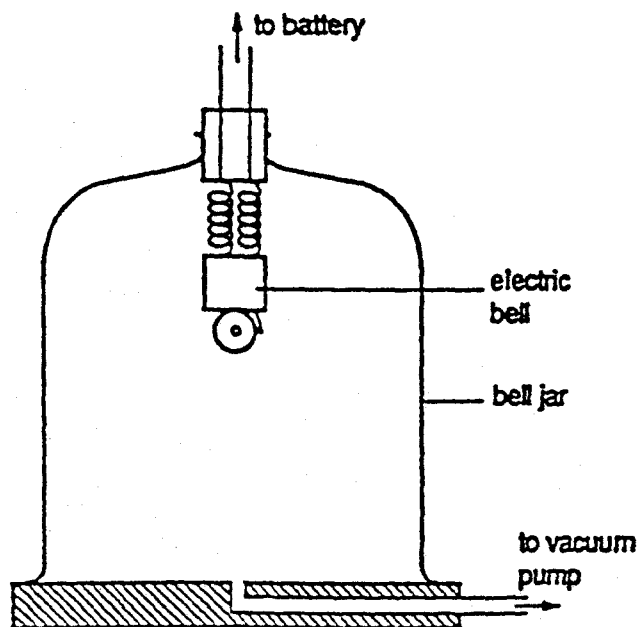


21 The following pieces of equipment are used on a ship.

Which equipment produces waves which are not electromagnetic?

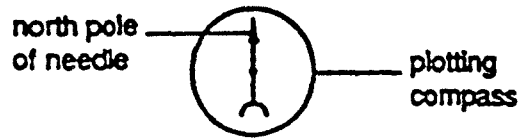
- A the navigation lights
- B the radar
- C the radio-transmitter
- D the siren (fog-horn)

- 22 The diagram shows apparatus used to find out what happens to the sound from an electric bell as air is removed from the bell jar.

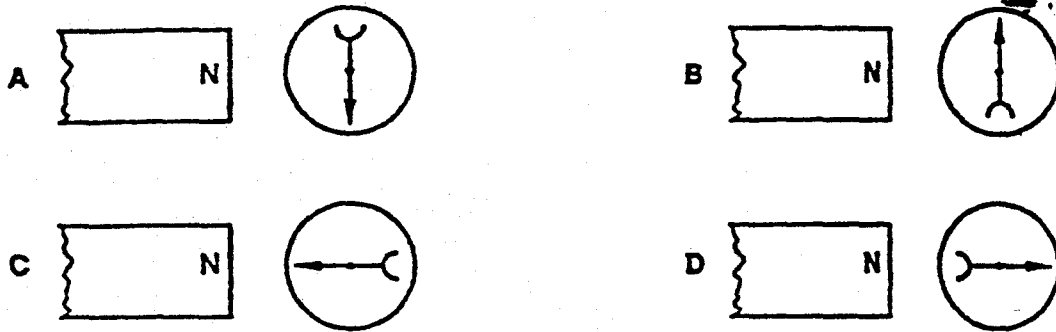


- As air is removed, the sound of the electric bell heard from outside the bell jar will
- A become louder.
 - B become quieter.
 - C become quieter then louder.
 - D remain the same.
- 23 A girl stands some distance from a large building. She claps her hands and a short time later hears an echo.
- The echo is produced because when the sound waves hit the building they are
- A absorbed.
 - B conducted.
 - C reflected.
 - D refracted.
- 24 Why is soft iron a good material to use for the core of an electromagnet?
- A It can easily be bent into shape.
 - B It is a good conductor of electricity.
 - C It is a good conductor of heat.
 - D It loses its magnetism easily.

- 25 A plotting compass is brought near to a bar magnet.



Which diagram shows the correct position of the needle?



- 26 When a plastic comb is placed near a small piece of aluminium foil hanging from a nylon thread, the foil is repelled by the comb.

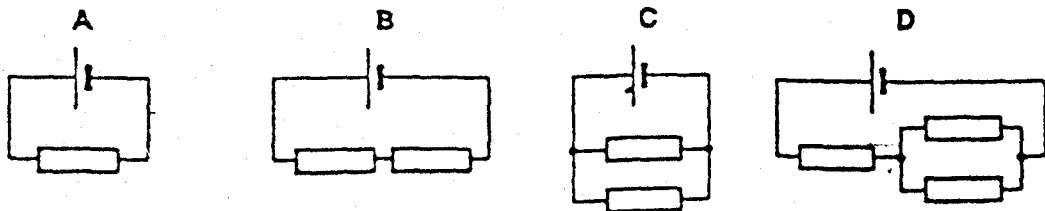
Which statement is correct?

- A The comb is charged and the foil is uncharged.
 - B The comb is uncharged and the foil is charged.
 - C The comb and the foil both have the same kind of charge.
 - D The comb and the foil have opposite kinds of charge.
- 27 What is the unit of electrical resistance?

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

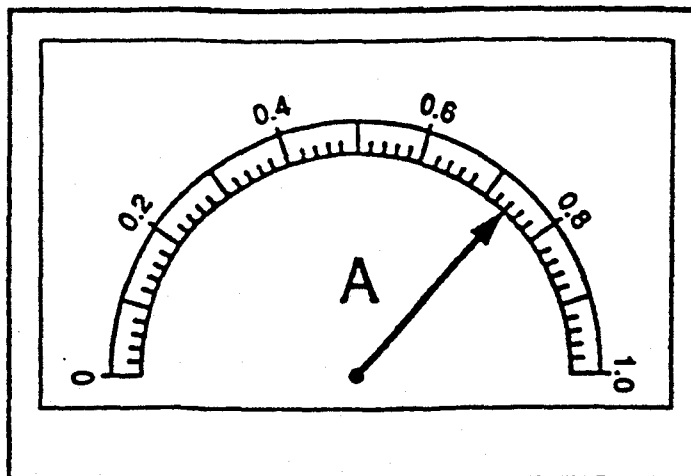
- 28 The diagrams show circuits using resistors of the same value.

Which circuit has the greatest total resistance?



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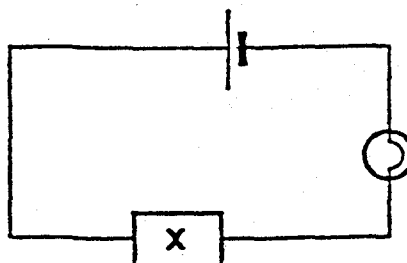
29 The diagram shows an ammeter.



What is the reading on the ammeter?

- A 0.67 A B 0.74 A C 6.70 A D 7.40 A

30 With component X placed in the circuit shown below, it was found that the brightness of the bulb could be gradually reduced until it went out.



What is component X?

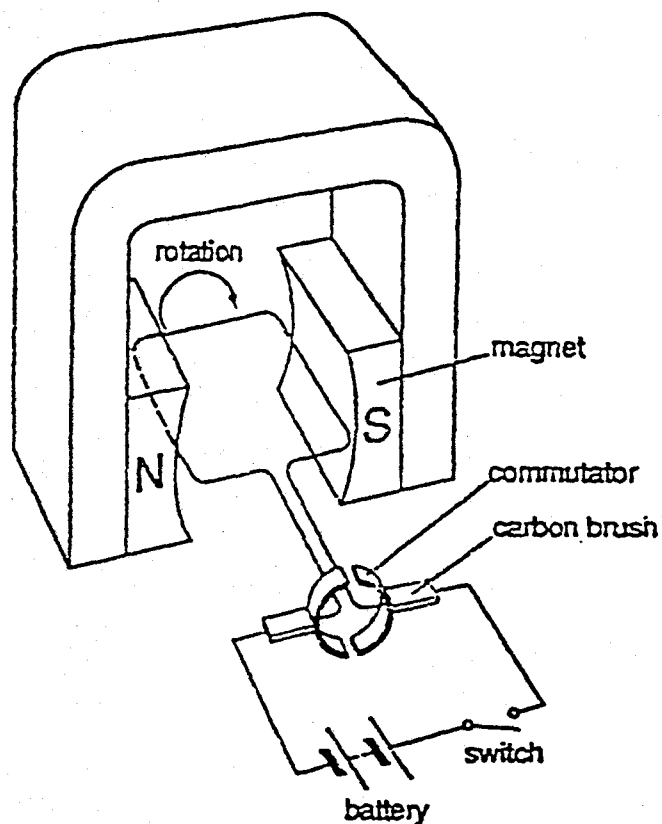
- A a battery
B a resistor
C a switch
D a variable resistor

31 A householder connects a cooker to the mains electricity supply using wire which is too thin.

Why is this a fire risk?

- A Heat from the cooker burns through the thin wire.
- B The large current leaks through the insulation.
- C The large current overheats the wire.
- D The resistance of the wire is too low.

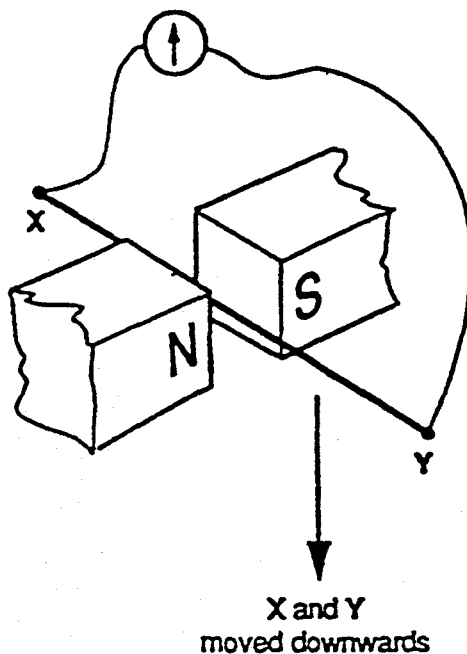
32 The diagram shows an electrical device.



What is this electrical device?

- A a.c. generator
- B d.c. motor
- C electric bell
- D transformer

33 The diagram shows an experiment to demonstrate electromagnetic induction.



X and Y are joined in turn by

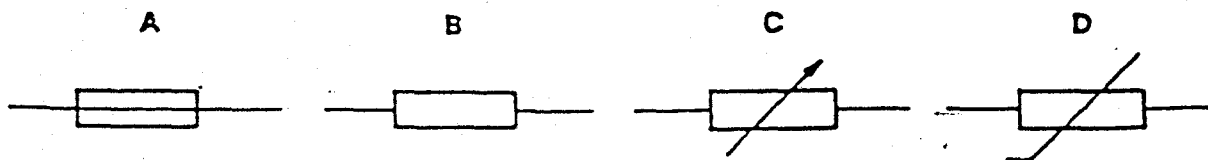
- A aluminium ribbon.
- B copper wire.
- C iron wire.
- D nylon fishing line.

Which experiment would not work?

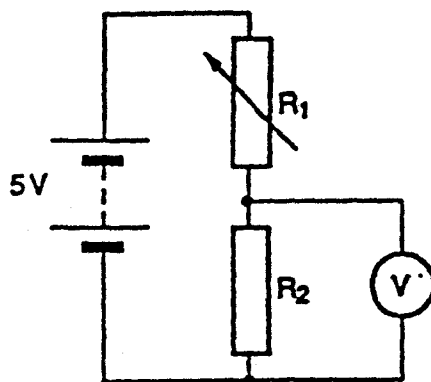
34 Why is electricity transmitted along power cables at very high voltages?

- A to allow transformers to be used
- B to make sure that the current will flow long distances
- C to reduce the loss of energy
- D to reduce the resistance of the cables

35 Which symbol represents an electrical component in which the resistance decreases as the temperature rises?



- 36 In the circuit below, when R_1 and R_2 both have values of $1000\ \Omega$, the voltmeter reads 2.5 V .



When the value of resistor R_1 is increased to $2000\ \Omega$, what will happen to the reading on the voltmeter?

- A It will decrease.
 - B It will fall to zero.
 - C It will increase.
 - D It will remain the same.
- 37 The activity of a radioactive source is measured at intervals during a period of 1200 s .

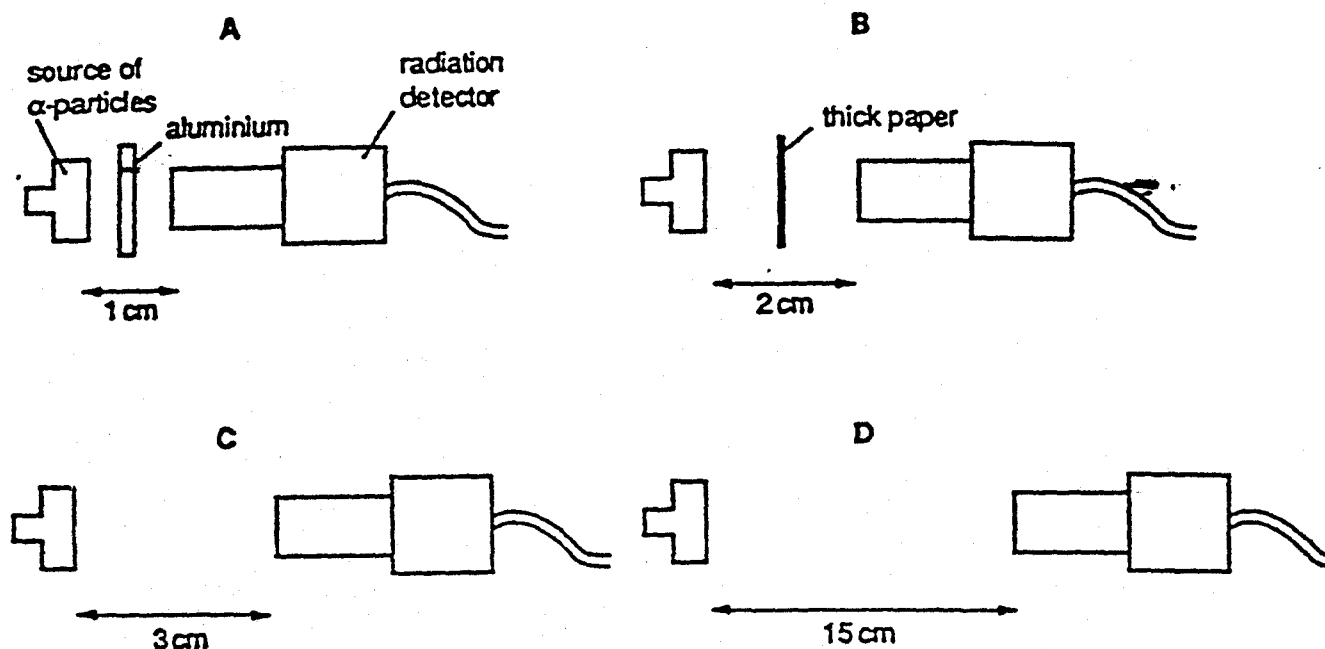
The results are given in the table.

<i>time/s</i>	<i>activity / counts per second</i>
0	101
300	50
600	?
900	13
1200	6

Which reading is most likely at 600 s ?

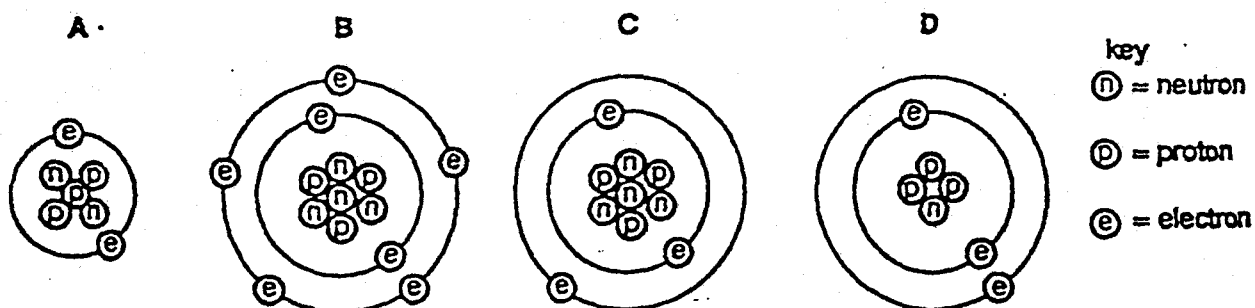
- A 19 B 24 C 31 D 37

38 Which diagram shows an arrangement in which α -particles emitted by a source can be detected?

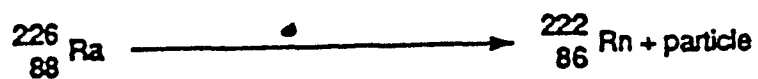


39 An atom of the element lithium has a nucleon number (mass number) of 7 and a proton number (atomic number) of 3.

Which diagram represents an atom of lithium?



40 The equation for the decay of radium into radon is



Which particle is emitted during this decay?

A α -particle ${}_{2}^{4}\text{He}$

B β -particle ${}_{-1}^{0}\text{e}$

C neutron ${}_{0}^{1}\text{n}$

D proton ${}_{1}^{1}\text{p}$