

0625/1

IGCSE NOV

PHYSICS

PAPER 1

Tuesday 16 NOVEMBER 1993 Morning 45 minutes

Additional materials:

Multiple Choice answer sheet

Soft clean eraser

Soft pencil (type B or HB are recommended)

UNIVERSITY OF CAMBRIDGE LOCAL EXAMINATIONS SYNDICATE UNIVERSITY OF CAMBRIDGE LOCAL EXAMINATIONS SYNDICATE



UNIVERSITY OF CAMBRIDGE LOCAL EXAMINATIONS SYNDICATE

INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

Instructions to candidates:

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO

Read these notes carefully

There are forty questions in this test. For each question, four suggested answers are given: only one answer is correct. In each case, you are to choose the correct answer and indicate it on the separate answer sheet.

Read the instructions on the separate answer sheet very carefully.

Attempt all questions. Marks will not be deducted for wrong answers: your total score on this test will be the number of correct answers you give.

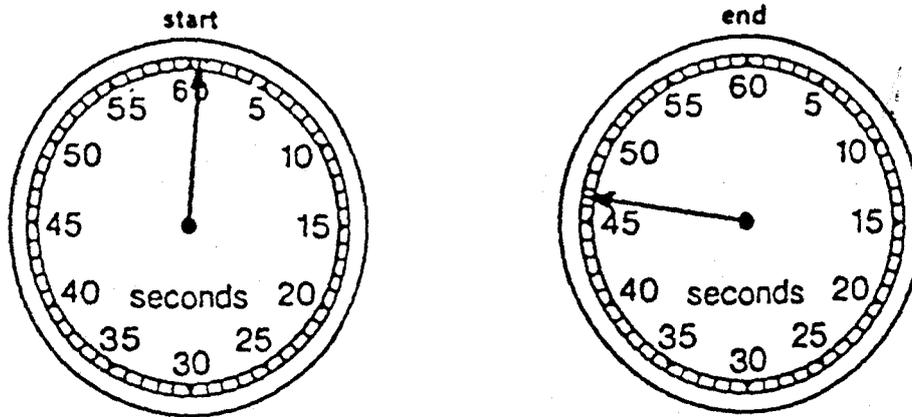
This Question Paper consists of 14 printed pages and 2 blank pages.

1

SB (A) 0625/006
C.U.C.E.S. 1993

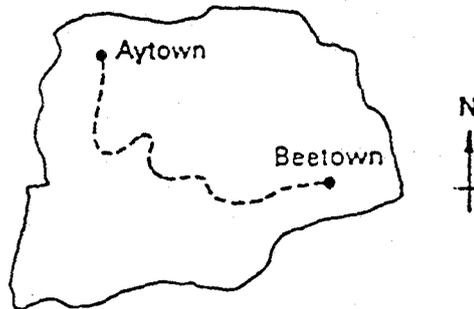
[Turn over

- 1 A stopwatch is used to time a race. The diagrams show the watch at the start and at the end of the race.



How long did the race take?

- A 45.7s B 46.0s C 46.5s D 47.0s
- 2 A train travels along a track from Aytown to Beetown. The map shows the route.

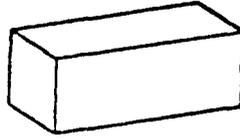


The distance travelled by the train between the towns is 210 km. It moves at an average speed of 70 km per hour.

How long does the journey take?

- A less than $\frac{210}{70}$ hours, because the journey is not in a straight line
- B exactly $\frac{70}{210}$ hours
- C exactly $\frac{210}{70}$ hours
- D more than $\frac{210}{70}$ hours, because the journey is not in a straight line
- 3 What is the symbol for a unit of mass?
- A J B kg C N D Pa

- 4 A rectangular block is made of clay of density of 1800 kg/m^3 .

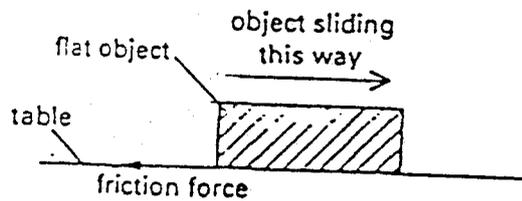


- The block is re-shaped into one which is twice as long and half as thick.



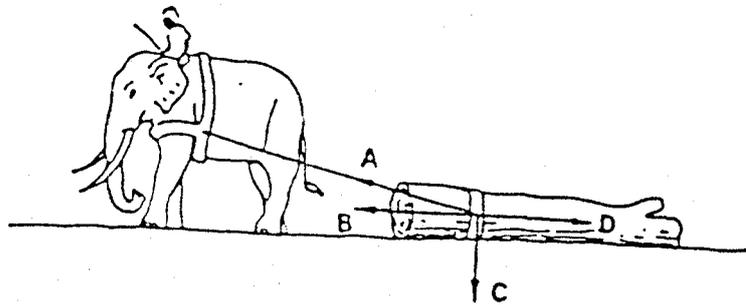
What is now the density of the clay?

- A 450 kg/m^3 B 900 kg/m^3 C 1800 kg/m^3 D 3600 kg/m^3
- 5 A flat object is pushed and then allowed to slide along on a table.
The friction force on the object is shown on the diagram.



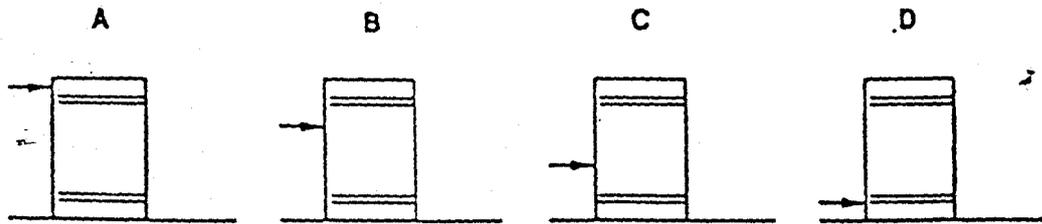
What will the friction force do to the sliding object?

- A nothing
B slow it down
C speed it up
D increase its weight
- 6 An elephant pulls a heavy log along the ground at a steady speed, as shown in the diagram.

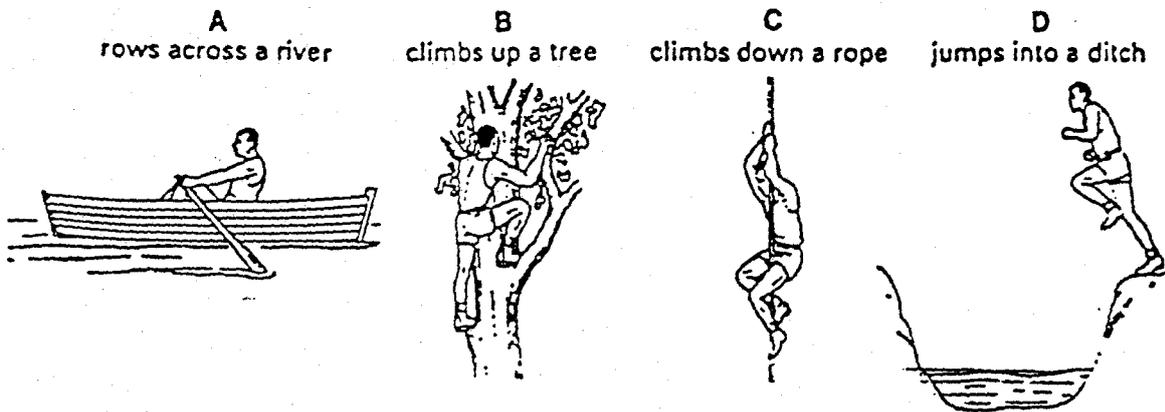


Which arrow shows the direction of the force of the rope on the log?

- 7 A child tries to push over a large empty oil drum.
Where should the drum be pushed to topple it with the least force?

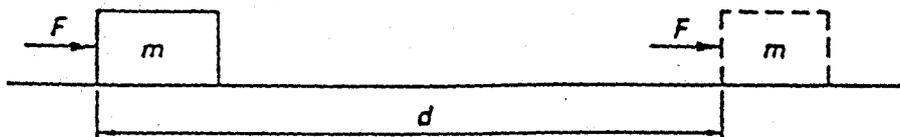


- 8 The diagrams show students on an outdoor activities course.



In which activity is there an increase in the gravitational energy of the student?

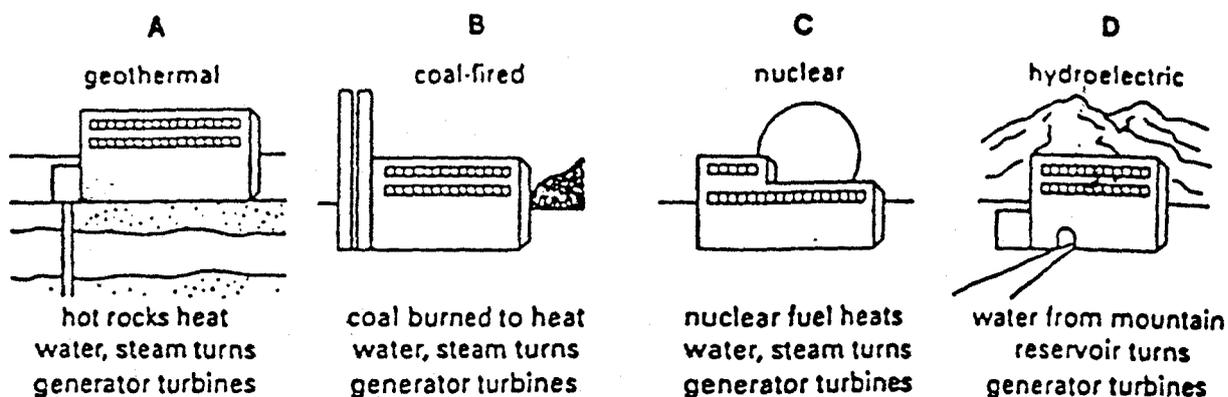
- 9 A mass m is pushed a distance d along a horizontal surface by a constant force F .



Which quantities must be known in order to calculate the work done by the force?

- A d and F only
- B d and m only
- C F and m only
- D d , F and m

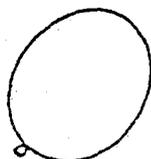
10 The diagrams show four types of power station.



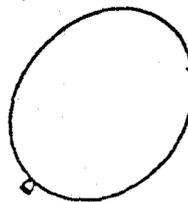
Which type of power station uses chemical energy to generate electricity?

11 The size of a balloon increases if the pressure inside it increases. The balloon will get bigger if it is left in the heat of the Sun.

cool balloon



hot balloon

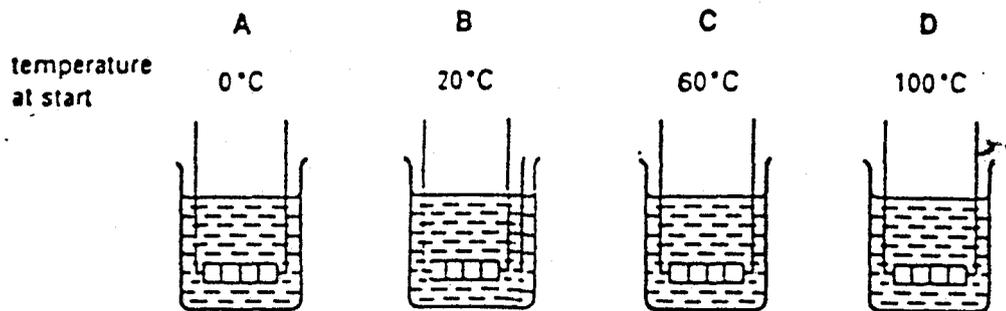


Why does this happen?

- A The number of air molecules inside it increases.
 - B The air molecules inside it are all moving outwards.
 - C The air molecules inside it are bigger when they are heated.
 - D The air molecules inside it move faster when they are heated.
- 12 When sweat evaporates, which change of state takes place?

- A liquid to solid
- B liquid to vapour
- C solid to vapour
- D vapour to liquid

- 13 Four beakers each contain the same volume of water, but at different temperatures, as shown in the diagram.

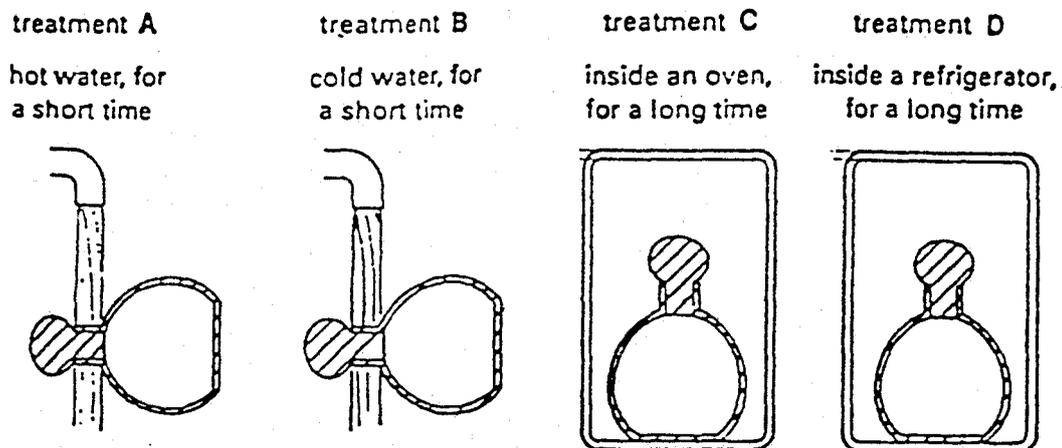


They are heated by similar electric heaters.

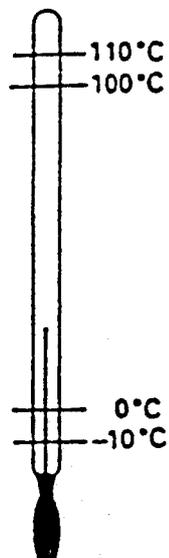
In which beaker does the temperature of the water stay the same?

- 14 The glass stopper in the neck of a glass bottle is too tight to come out.

Which diagram shows the treatment which is most likely to loosen the stopper?



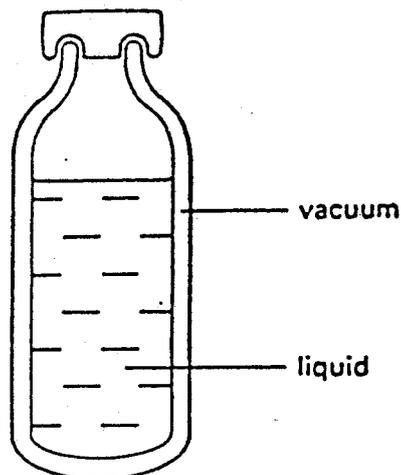
15 The diagram shows four centigrade markings on a liquid-in-glass thermometer.



Which temperatures are the upper and lower fixed points?

	<i>upper fixed point/°C</i>	<i>lower fixed point/°C</i>
A	110	0
B	110	-10
C	100	0
D	100	-10

16 The diagram shows a vacuum flask, used to keep liquids hot.



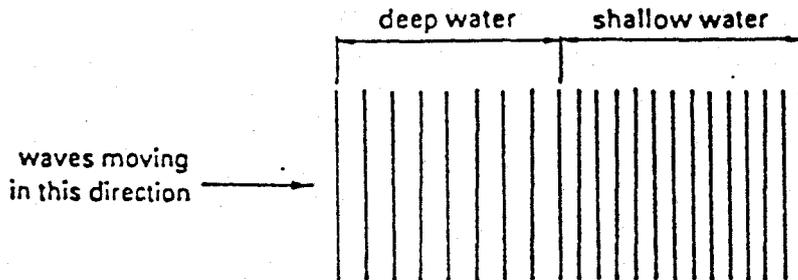
What type(s) of heat loss are reduced by the vacuum?

- A conduction only
- B conduction and convection only
- C convection and radiation only
- D conduction, convection and radiation

17 On a sunny day, why does a swimmer coming out of the sea soon feel cold?

- A Air is a bad conductor of heat.
- B Convection occurs in the air.
- C Water evaporates from the skin.
- D Water is a good conductor of heat.

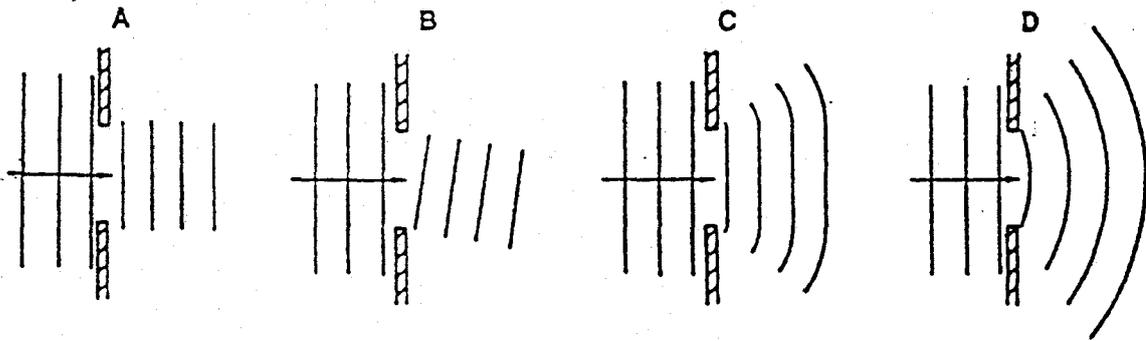
18 The diagram shows waves in a ripple tank passing from deep water to shallow water.



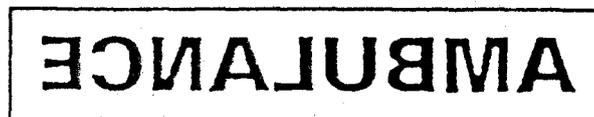
What happens as the waves pass from the deep to the shallow water?

- A The frequency of the waves increases.
- B The frequency of the waves decreases.
- C The speed of the waves increases.
- D The speed of the waves decreases.

19 Which diagram represents the diffraction of water waves at a wide gap?



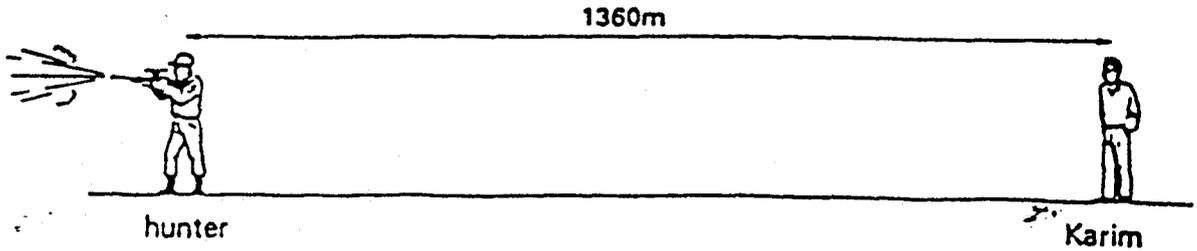
20 On the front of an ambulance, the word is often written backwards in large letters as shown.



Why is the word written in this way?

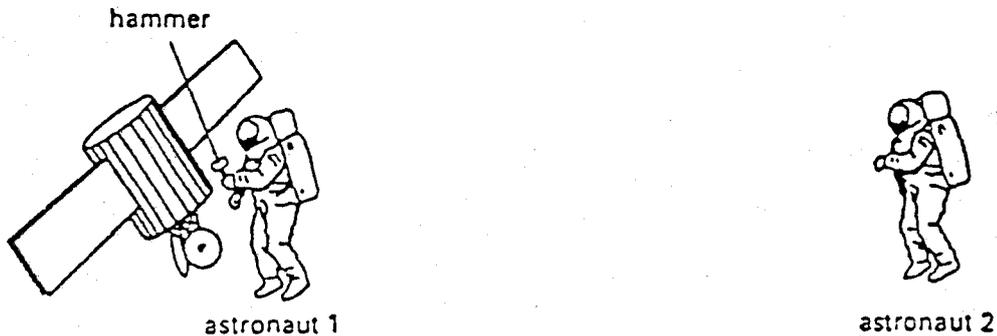
- A to make it show up more clearly
- B to make other drivers think about what it says
- C so that it reads correctly when the ambulance is reversing
- D so that it will read as AMBULANCE in the rear-view mirror of the car in front

- 21 Karim was watching a hunter in the distance. The hunter fired a gun.



Given that the sound travelled at 340 m/s, how long did the sound take to reach Karim?

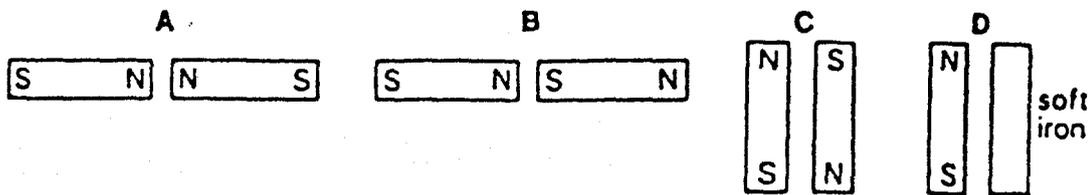
- A 0s B 0.25s C 4.0s D 340s
- 22 Astronaut 1 uses a hammer to mend a satellite in space. Astronaut 2 is nearby. There is no air in space.



Compared with the sound which would have been heard if they were working on Earth, what does astronaut 2 hear?

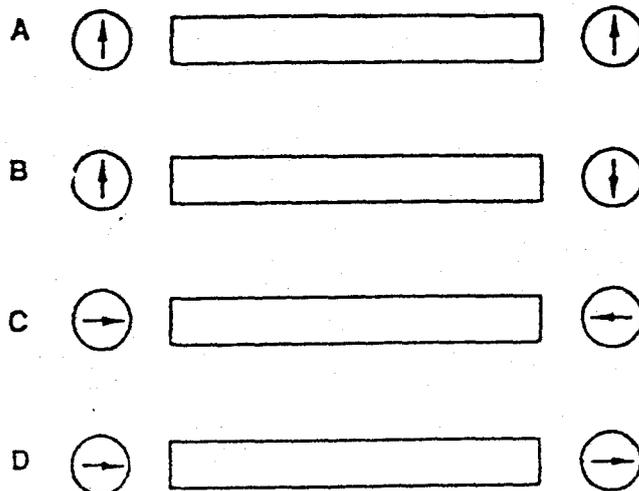
- A a louder sound
 B a sound of the same loudness
 C a quieter sound
 D no sound at all
- 23 Why do women's voices usually have a higher pitch than men's voices?
- A Women's voices are louder.
 B Women's vocal cords vibrate at higher frequencies.
 C The sound waves women produce travel faster.
 D The sound waves women produce have longer wavelengths.

24 Which of the following arrangements would produce repulsion?



25 A plotting compass is placed at each end of a magnet.

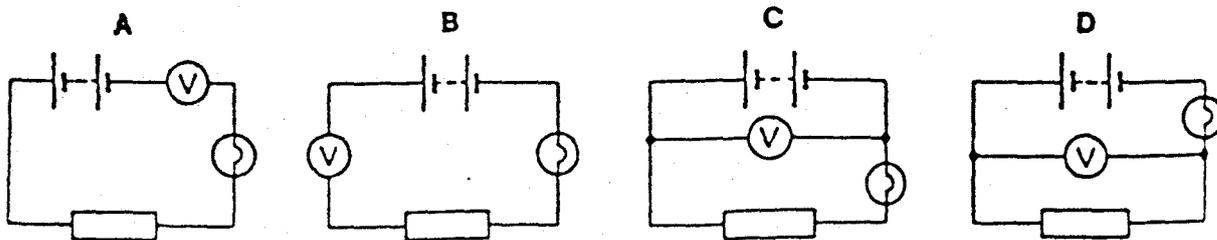
Which diagram shows the correct positions of the pointers of the plotting compasses?



26 Which of the following particles cannot experience a force in an electric field?

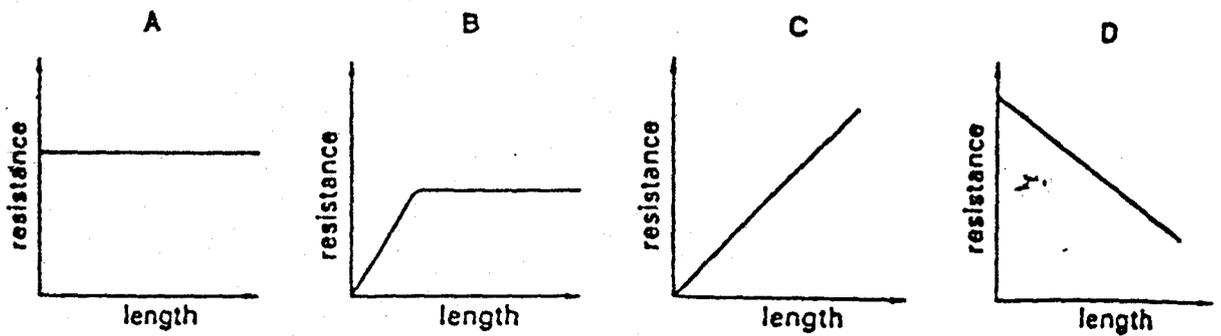
A α-particle mass = 4 charge = +2	B electron mass = 0 charge = -1	C neutron mass = 1 charge = 0	D proton mass = 1 charge = +1
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27 Which circuit shows the voltmeter correctly connected to measure the potential difference across the battery?

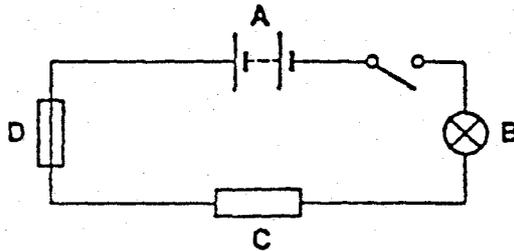


- 28 The resistance of different lengths of wire is measured. The wires are made of the same metal and are of the same thickness.

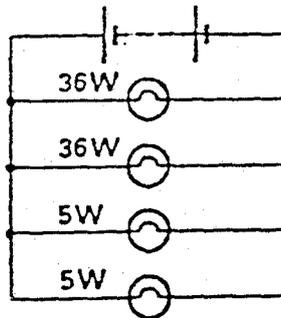
Which graph shows how the resistance changes with length?



- 29 Which symbol represents a fuse?



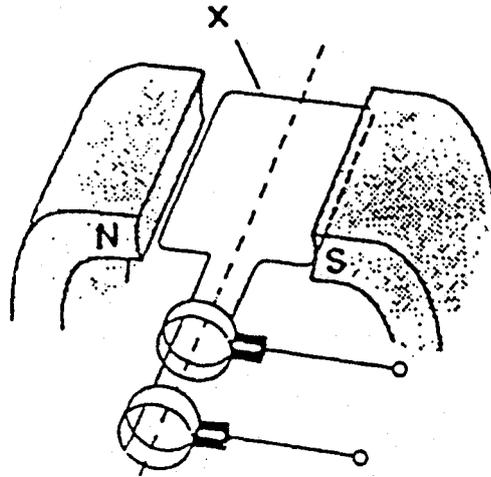
- 30 Below is a wiring diagram for car headlights and front parking lights.



Why are the lamps connected in parallel?

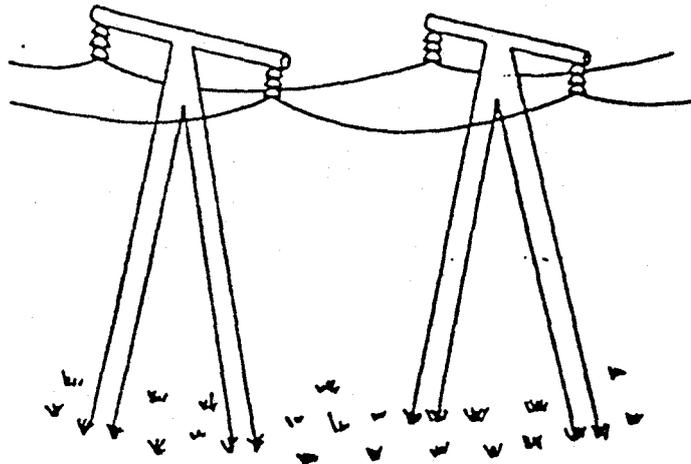
- A It makes the current in each lamp the same.
 - B If one lamp goes out then the others will remain lit.
 - C The lamps will operate at normal brightness even when the battery runs down.
 - D The voltage across each lamp is one quarter of the battery voltage.
- 31 Why is a fuse used in an electric circuit?
- A to break the circuit when the current exceeds a certain value
 - B to ensure that the current in the circuit exceeds a certain value
 - C to save energy by reducing the current
 - D to save energy by reducing the voltage

- 32 The diagram shows an arrangement for an a.c. dynamo.



What is the part labelled X?

- A a brush
 - B a coil
 - C a magnet
 - D a slip-ring
- 33 The diagram shows cables used in the transmission of electrical energy over land.



Why are high voltages used?

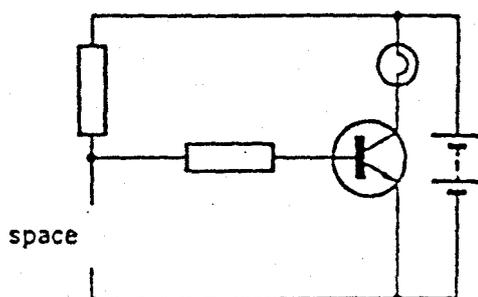
- A Generators always produce high voltages.
- B Fear of high voltages stops people from interfering with the cables.
- C Heat loss in the cables is smaller than when low voltages are used.
- D High voltages produce large magnetic fields, so less insulation is needed.

- 34 When a current is passed through a wire placed at right-angles to a magnetic field, the wire experiences a force.

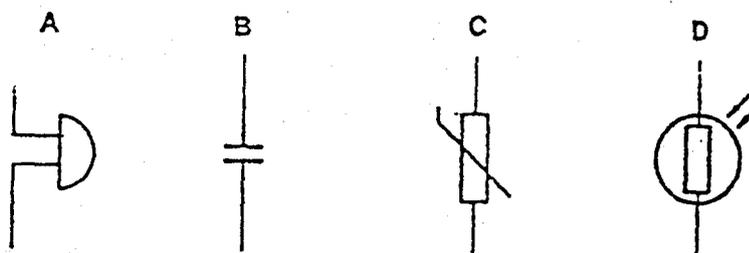
Which of the following makes use of this effect?

- A an electric motor
- B an electromagnet
- C a generator
- D a transformer

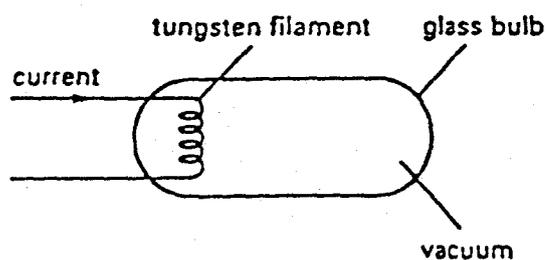
- 35 The circuit below is to be used as a light-sensitive switch.



Which component should be connected in the space to light up the lamp in darkness?



- 36 A tungsten filament is heated by an electric current until it glows red.



What particles are emitted from the filament?

- A α -particles
- B electrons
- C neutrons
- D protons

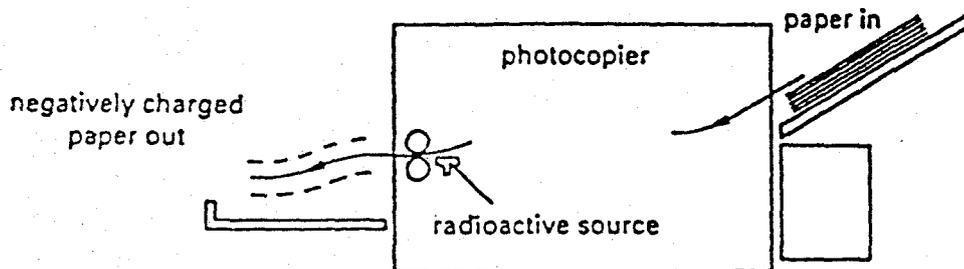
- 37 A sample of radioactive uranium has mass 1g. Another sample of the same material has mass 2g.

Which of the following is the same for both?

- A the amount of radiation emitted per second
- B the half-life
- C the number of uranium atoms
- D the volume

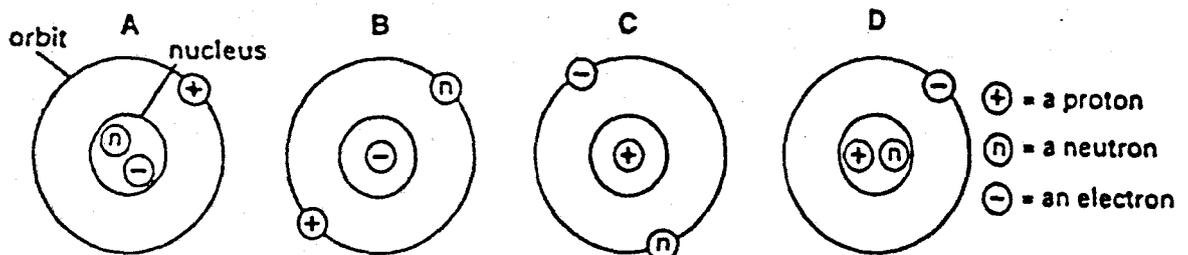
- 38 Paper coming out of a photocopier sometimes carries a negative charge which makes it stick to things.

A radioactive source has been used to reduce this charge, as shown in the diagram.



Which type of source will be most effective in reducing the negative charge?

- A α -particle
 - B β -particle
 - C γ -ray
 - D neutron
- 39 Which diagram could represent an atom?



- 40 Which atom in the table has a nucleon number (mass number) of 4?

atom	number of protons	number of neutrons	number of electrons
A tritium	1	2	1
B helium	2	2	2
C lithium	3	4	3
D beryllium	4	5	4