

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

PHYSICS

0625/1

PAPER 1 Multiple Choice

Thursday

16 NOVEMBER 1995

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 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.

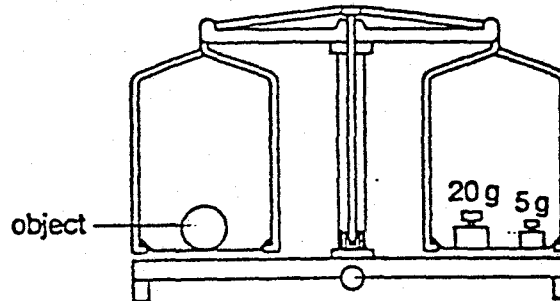
Any rough working should be done in this booklet.

This question paper consists of 16 printed pages.

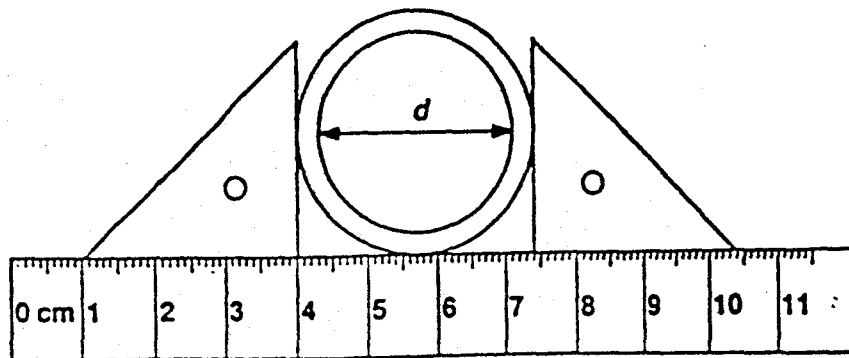
- 1 A ball rolls down a ramp. The time it takes to move from X to Y is measured.



- Which other quantity must be measured in order to calculate the average speed of the ball between X and Y?
- A angle of slope
 B diameter of the ball
 C distance between X and Y
 D height of ramp
- 2 The diagram shows an object on a simple balance.

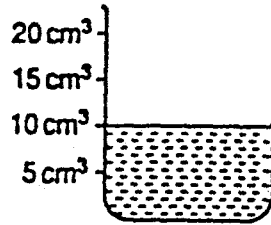


- What is the mass of the object?
- A 5 g B 15 g C 20 g D 25 g
- 3 The diagram shows a thick-walled tube. The thickness of the wall is 3 mm.



- What is the internal diameter d of the tube?
- A 2.8 cm B 3.1 cm C 3.4 cm D 7.4 cm

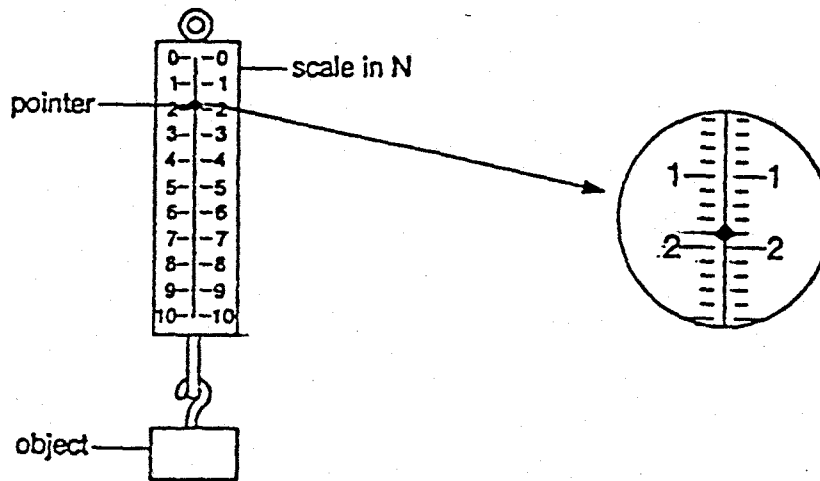
- 4 The beaker shown has a mass of 16 g when empty and 28 g when filled to the 10 cm³ mark.



What is the density of the liquid in the beaker?

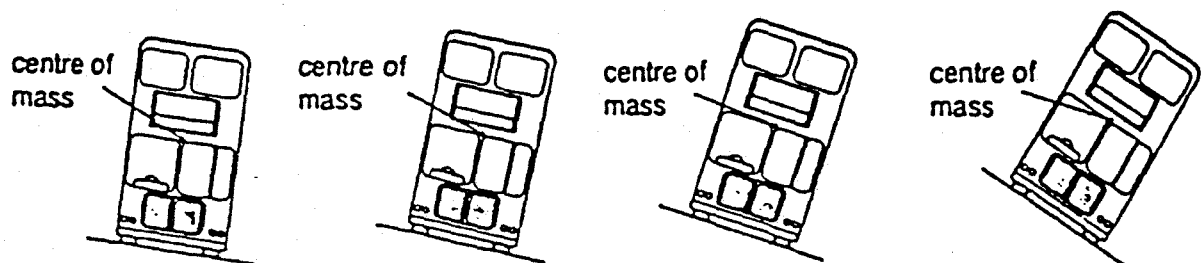
- A $\frac{10}{28-16}$ g/cm³ B $\frac{28-16}{10}$ g/cm³ C $\frac{16}{10}$ g/cm³ D $\frac{28}{10}$ g/cm³

- 5 The diagram shows a force meter.



What is the reading shown?

- A 1.4 N B 1.8 N C 2.1 N D 2.2 N
- 6 The diagram shows four models of buses placed on different ramps. At first, the models are held in position.

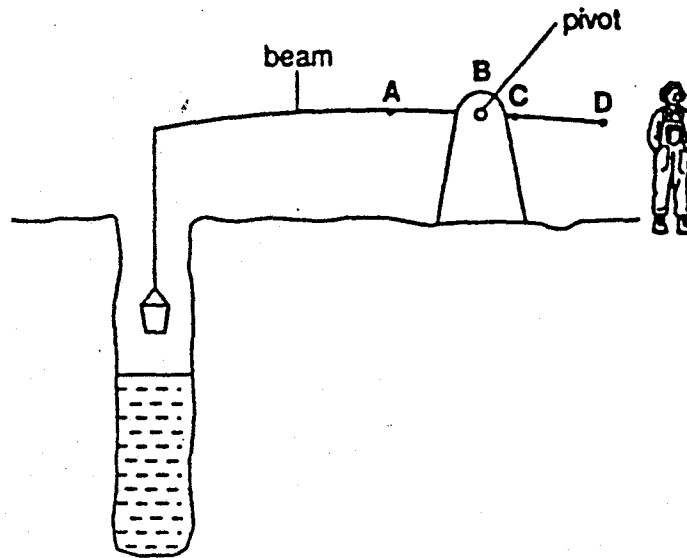


How many of these models will fall over when released?

- A 1 B 2 C 3 D 4

- 7 The diagram shows a girl who wants to use a beam to lift water from a well.

Where should she push down on the beam so that she exerts the smallest force?

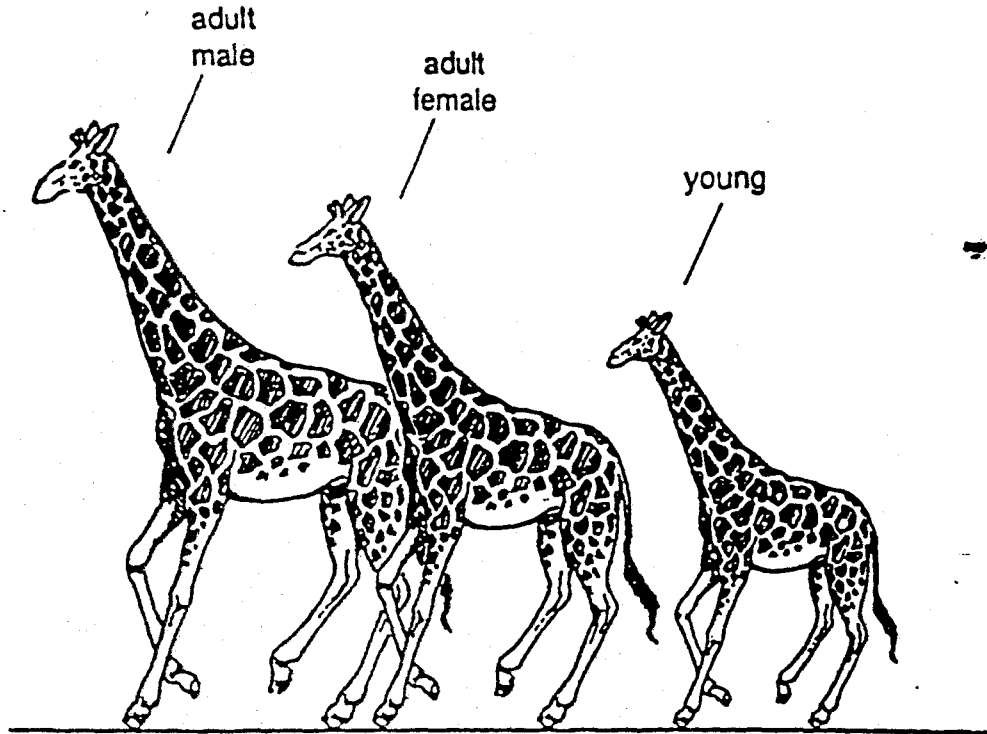


- 8 Which process could release geothermal energy?
- A drilling into the Earth's crust
 - B harnessing the power of waves
 - C harnessing the wind using windmills
 - D splitting of heavy atoms
- 9 David is lifting boxes of identical mass from the ground on to a bench. At first, it takes him 2 s to lift each box. Later in the day, it takes him 3 s.

Later in the day,

- A less work is done in lifting each box.
- B more work is done in lifting each box.
- C smaller power is produced in lifting each box.
- D greater power is produced in lifting each box.

10 The picture shows a family of giraffes.

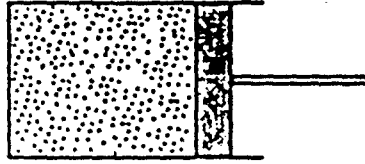


The heart of a giraffe acts as a pump to produce the pressure needed to pump blood to the height of the head.

Which statement about the pressure is correct for the giraffes in this family?

- A It is largest for the adult male.
 - B It is largest for the young giraffe.
 - C It is the same for all giraffes.
 - D It is the same for both adult giraffes.
- 11 Assuming that the tyre does not change its shape or size, air in a car tyre will, at the end of a long motorway journey, have
- A a higher temperature and a higher pressure than before.
 - B a higher temperature and a lower pressure than before.
 - C a lower temperature and a higher pressure than before.
 - D a lower temperature and a lower pressure than before.

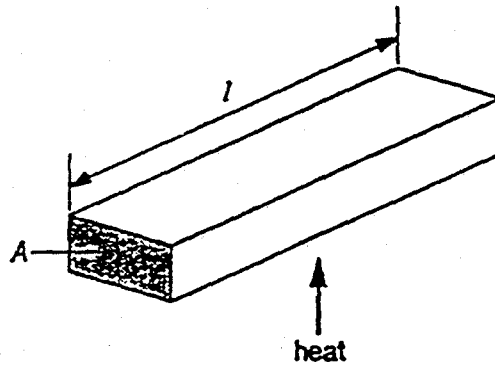
- 12 Air is contained in a cylinder by a piston which is free to move.



- What happens to the air when its temperature is increased?

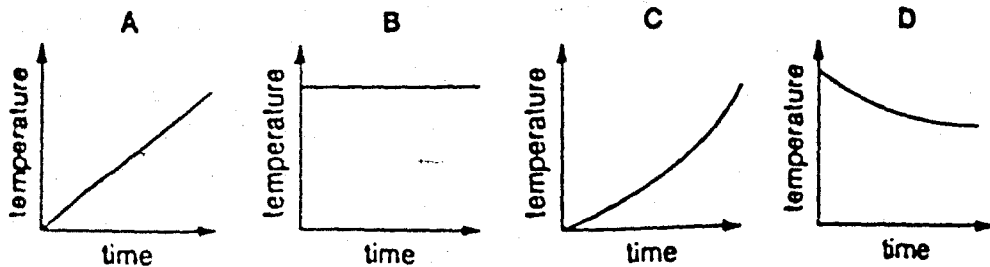
	<i>speed of molecules in the air</i>	<i>volume of air</i>
A	faster	bigger
B	faster	smaller
C	slower	bigger
D	slower	smaller

- 13 A metal bar is heated.



Which quantity stays the same?

- A the area of cross-section A of the bar
 B the internal energy of the bar
 C the length l of the bar
 D the thermal capacity of the bar
- 14 Which graph would be obtained by plotting temperature against time for warm water which is cooling?



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15 A cup of tea is stirred with a plastic spoon and then with a metal spoon.

Why does the metal spoon feel hotter than the plastic one?

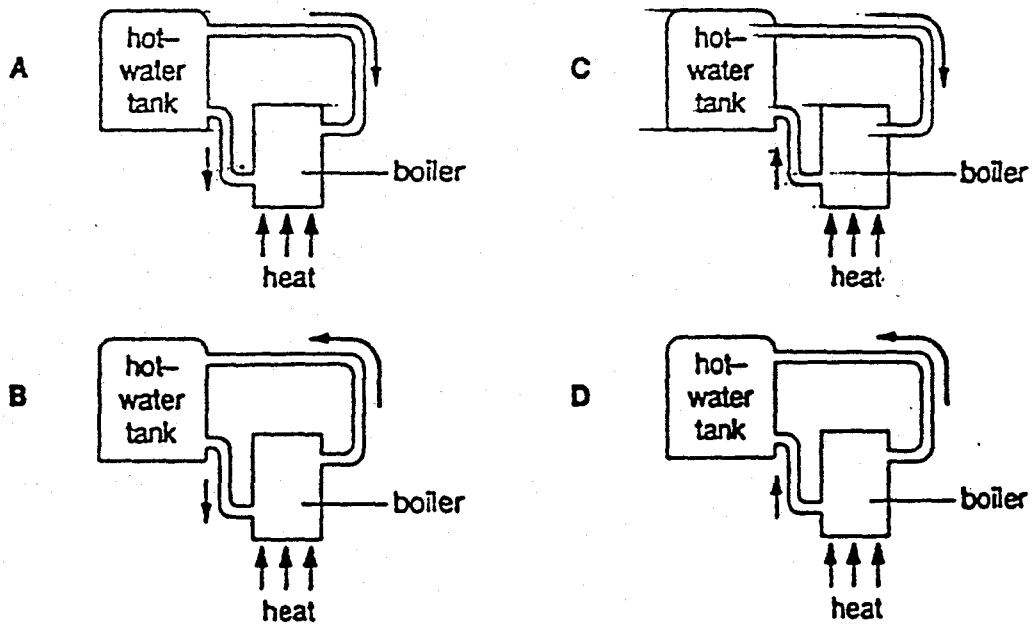
- A Metal has a higher melting point.
- B Metal is a better conductor of heat.
- C Metal is a better radiator of heat.
- D Metal is a better reflector of heat.

16 How does the heat energy from the Sun reach the Earth?

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

17 The diagrams show part of a water-heating system which is working by convection.

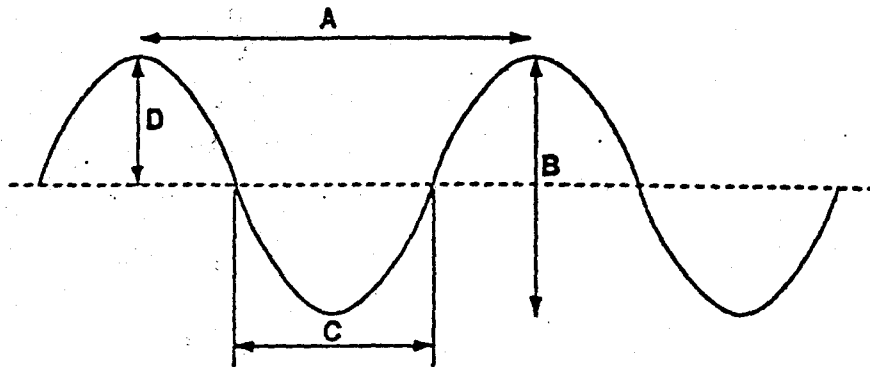
Which diagram shows the most likely flow of water in the system?



18 Which line in the table correctly shows the nature of the waves?

	<i>transverse</i>	<i>longitudinal</i>
A	light	radio
B	radio	sound
C	sound	water
D	water	light

19 Which distance on the diagram represents the amplitude of the wave?

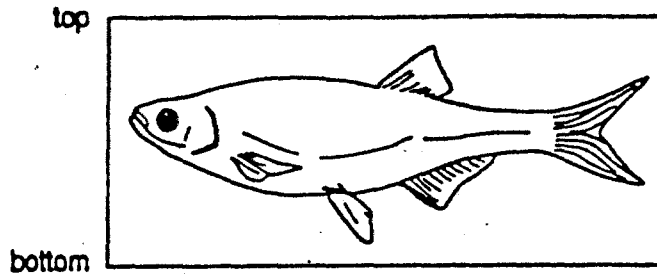


20 The Sun gives out infra-red, visible and ultraviolet rays.

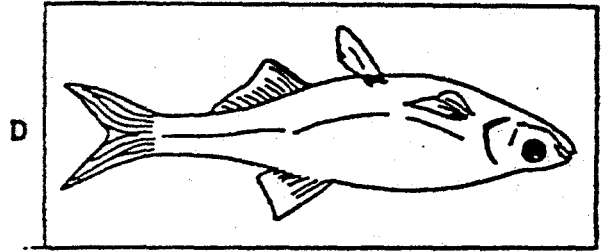
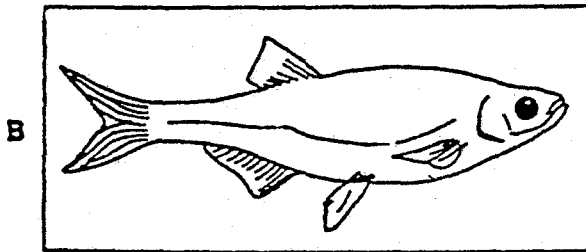
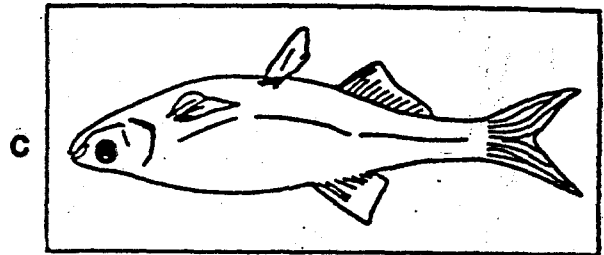
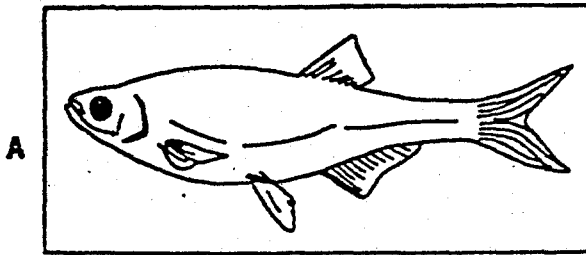
Which statement about the time it takes these radiations to reach the Earth's atmosphere is correct?

- A Infra-red radiation arrives first.
- B Visible radiation arrives first.
- C Ultraviolet radiation arrives first.
- D They all arrive at the same time.

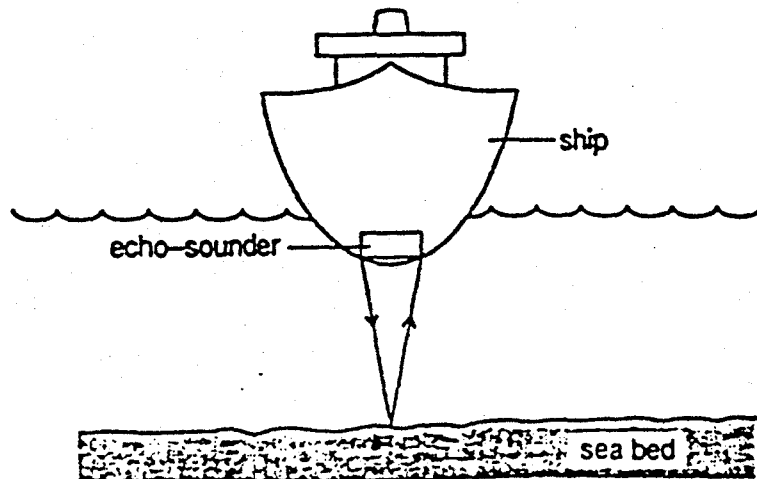
21 The picture shows a fish.



What would the reflection of the fish look like, if you held the picture this way up, beside your face, in front of a plane mirror?



22 An echo-sounder on a ship produced a pulse of sound, the echo of which was received by the echo-sounder after 2 seconds.



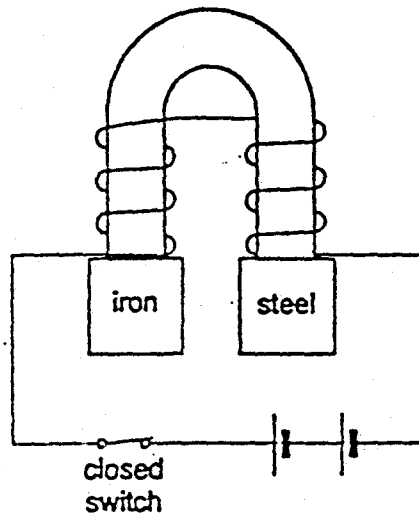
The speed of sound in sea water is 1500 m/s. What is the depth of the sea?

- A 750 m B 1500 m C 3000 m D 6000 m

23 Which musical note could best be described as a loud, low-pitched sound?

	<i>amplitude of note</i>	<i>frequency of note</i>
A	small	high
B	small	low
C	large	high
D	large	low

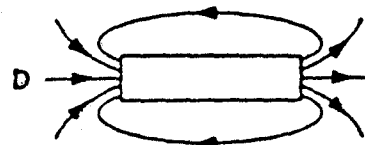
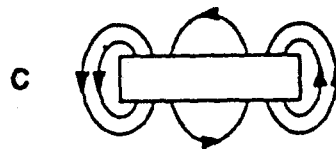
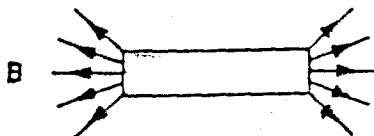
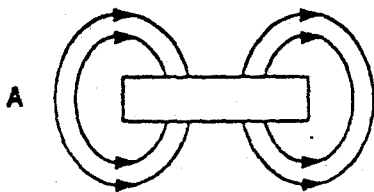
24 The diagram shows an electromagnet attracting a bar of iron and a bar of steel.



What happens when the switch is opened?

	<i>iron bar</i>	<i>steel bar</i>
A	falls off	falls off
B	falls off	stays attracted
C	stays attracted	falls off
D	stays attracted	stays attracted

25 Which diagram best represents the shape of the magnetic field around a bar magnet?



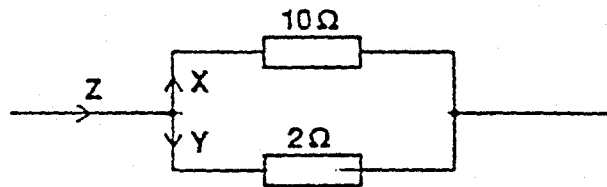
26 Which item would not become charged with static electricity?

- A metal comb used on dry hair
- B nylon brush used on dry hair
- C polythene bag rubbed on a dry woollen sweater
- D rubber balloon rubbed on a dry woollen sweater

27 In which unit is the e.m.f. of a battery measured?

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

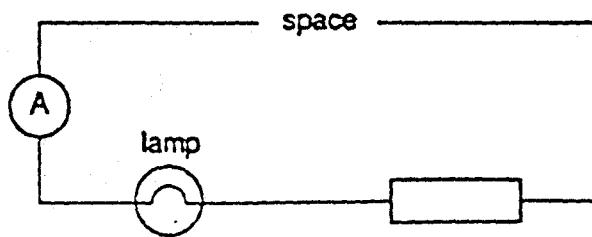
28 In the diagram, Z is a current from a source. X and Y are the currents in each branch of the parallel circuit.



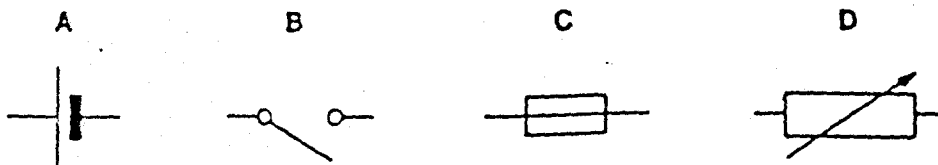
Which statement is correct?

- A X is bigger than Y but smaller than Z.
- B X is equal to Y but smaller than Z.
- C Y is bigger than X but smaller than Z.
- D Z is equal to X but bigger than Y.

29 The diagram shows an incomplete circuit.



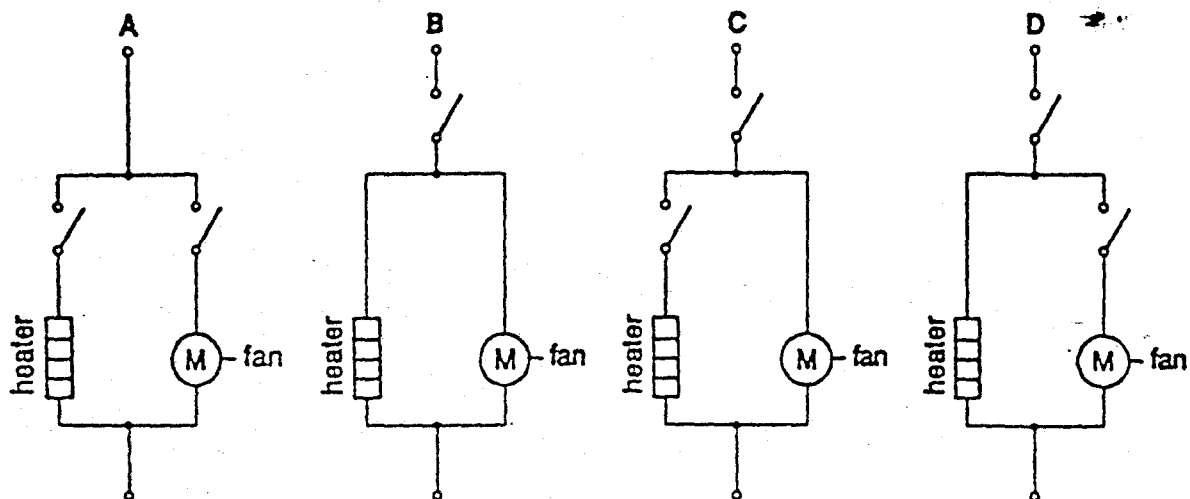
Which component should be connected in the space to make the lamp light?



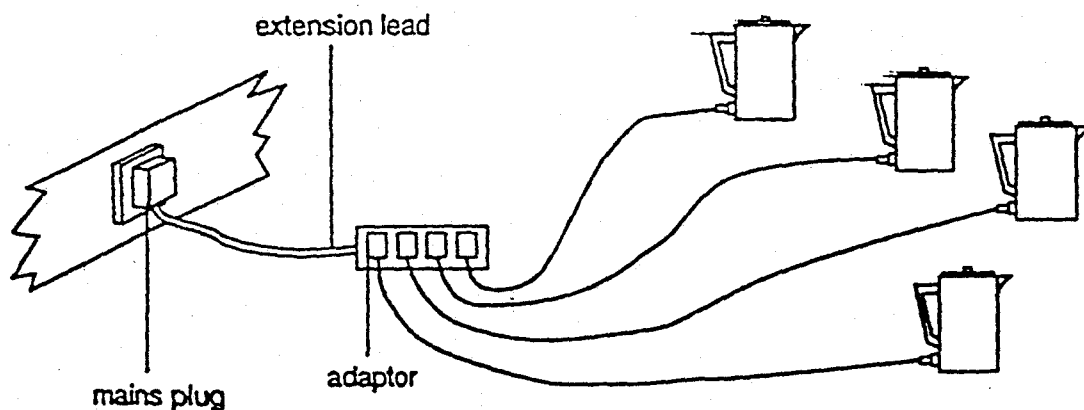
30 A hair-dryer should

- (i) allow the fan to work with or without the heater;
- (ii) not allow the heater to work without the fan.

Which circuit should be used?



31 The diagram shows four electric kettles plugged into a 4-way adaptor. An extension lead connects the adaptor to a single mains plug.

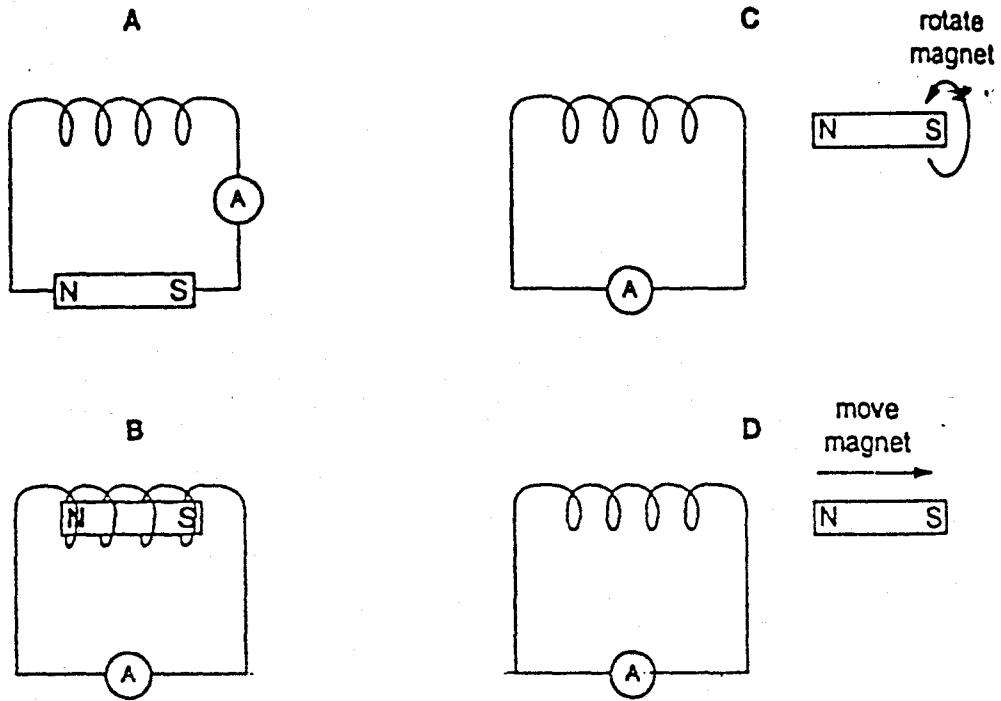


If the mains plug works without a fuse, why is this use of the adaptor dangerous?

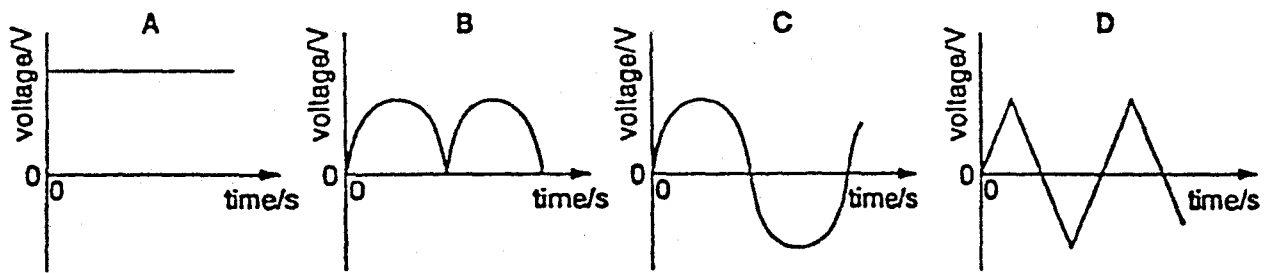
- A The elements in the kettle will become too hot.
- B The lead connecting the adaptor to the mains plug will overheat.
- C The leads connecting the kettles to the adaptor will overheat.
- D The water in the kettles will overheat.

32 A pupil is given a coil of wire, a magnet and a sensitive ammeter.

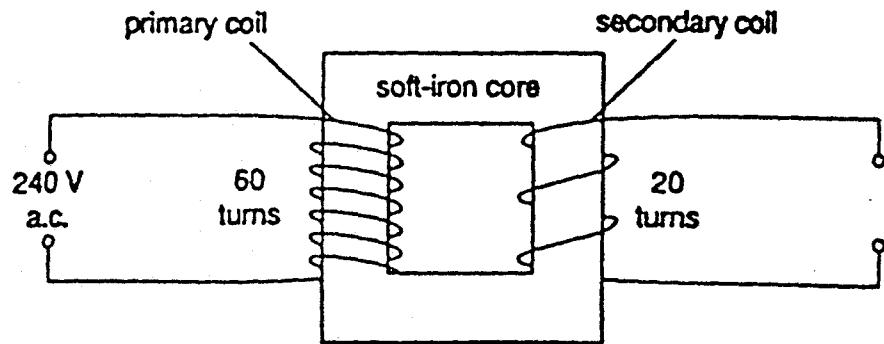
Which diagram shows how these can be used to produce an electric current?



33 Which graph shows how the voltage output of a simple a.c. generator varies with time?

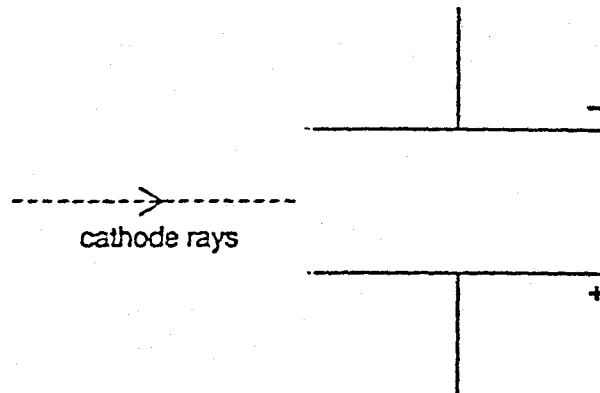


- 34 The diagram shows a transformer connected to a 240 V a.c. supply.



What is the potential difference across the secondary coil of the transformer?

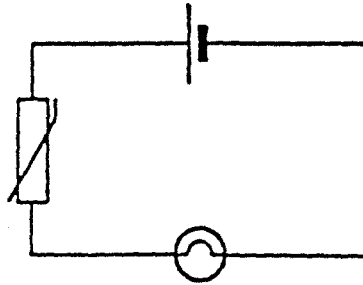
- A 20V B 40V C 60V D 80V
- 35 The dotted line in the diagram shows a beam of cathode rays entering the space between two charged plates.



Which way will the cathode rays be deflected?

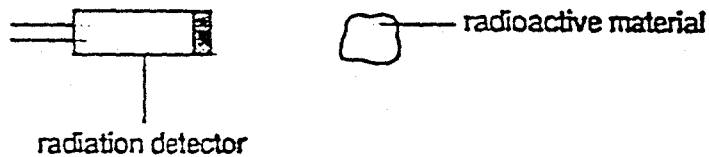
- A into the diagram, away from you
 B out of the diagram, towards you
 C towards the negative plate (-)
 D towards the positive plate (+)

- 36 When the thermistor in the circuit below is heated, the lamp becomes brighter.



Why does this happen?

- A The resistance of the lamp decreases.
 - B The resistance of the lamp increases.
 - C The resistance of the thermistor decreases.
 - D The resistance of the thermistor increases.
- 37 A radiation detector is placed near a sample of radioactive material and is used to measure the count rate.

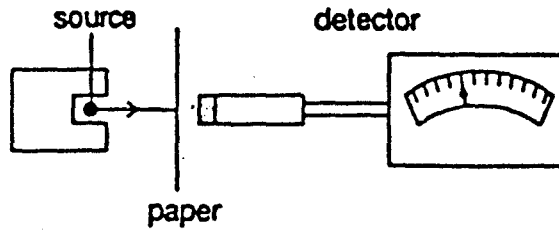


The radioactive material is removed but there is still a count rate.

Why is this?

- A It takes a long time for all the emissions from the material to reach the detector.
- B The detector has become radioactive.
- C The radioactive material has not finished decaying.
- D There is always some background radiation.

- 38 A thin sheet of paper is placed between a radioactive source and a radiation detector. The count rate falls to a very low reading.



Which type of radiation is the source emitting?

- A α -particles
 - B β -particles
 - C γ -rays
 - D X-rays
- 39 A neutral atom has 8 protons and 10 neutrons.
How many electrons does it have?
- A 0 B 8 C 10 D 18
- 40 The nuclide ${}_{38}^{90}\text{Sr}$ decays to ${}_{39}^{90}\text{Y}$.
How does this happen?
- A by emission of an α -particle
 - B by emission of a β -particle
 - C by gaining an electron
 - D by gaining a neutron