Cambridge Assessment International Education

Cambridge IGCSE™

PHYSICS **0625/11**

Paper 1 Multiple Choice (Core) **May/June 2022**

45 minutes

You must answer on the multiple choice answer sheet.

You will need: Multiple choice answer sheet
Soft clean eraser
Soft pencil (type B or HB is recommended)

INSTRUCTIONS

- 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 multiple choice answer sheet.
- Follow the instructions on the multiple choice answer sheet.
- Write in soft pencil.
- Write your name, centre number and candidate number on the multiple choice answer sheet in the spaces provided unless this has been done for you.
- Do **not** use correction fluid.
- Do **not** write on any bar codes.
- You may use a calculator.
- Take the weight of 1.0 kg to be 10 N (acceleration of free fall = 10 m / s^2).

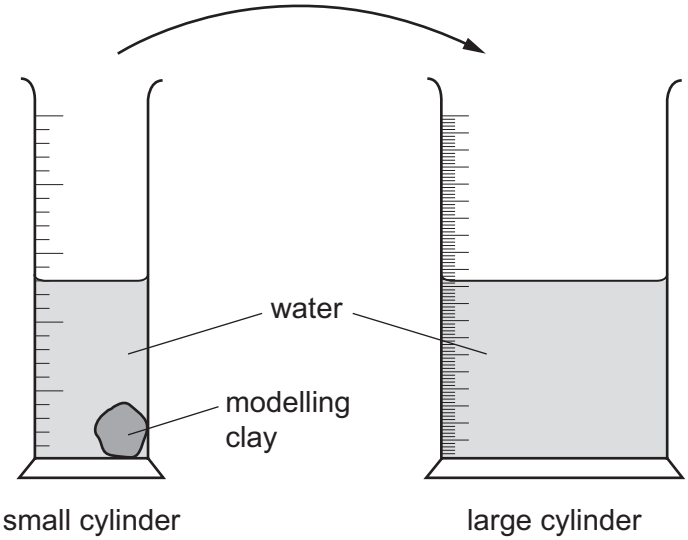
INFORMATION

- The total mark for this paper is 40.
- Each correct answer will score one mark.
- Any rough working should be done on this question paper.

This document has **20** pages. Any blank pages are indicated.

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1 A lump of modelling clay is moved from a small measuring cylinder to a large measuring cylinder that has twice the diameter.

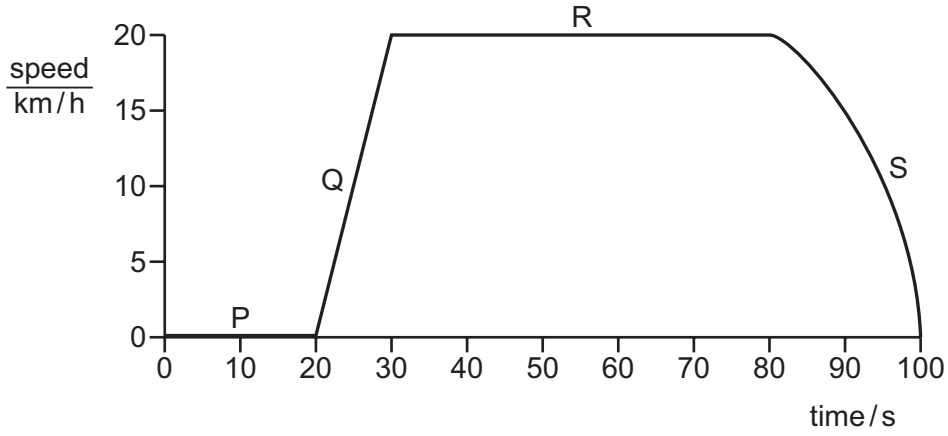


The reading on the small measuring cylinder goes down by 20 cm^3.

By how much does the reading on the large cylinder go up?

A 10 cm^3 **B** 20 cm^3 **C** 40 cm^3 **D** 80 cm^3

2 The speed–time graph for a train is shown.



Which regions of the graph show the train moving?

A P, Q, R and S

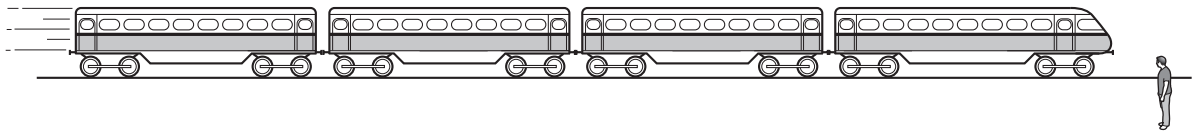
B Q, R and S only

C Q and S only

D R only

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3 A man stands next to a railway track.



A train travelling at 40 m / s takes 2.0 s to pass the man.

What is the length of the train?

A 20 m **B** 38 m **C** 40 m **D** 80 m

4 A spring balance operates by the compression of a spring. It has been calibrated on the Earth in grams.

A beam balance operates by balancing standard masses against the unknown mass to be measured.

The same unknown mass is measured with each balance on the Earth and on the Moon.

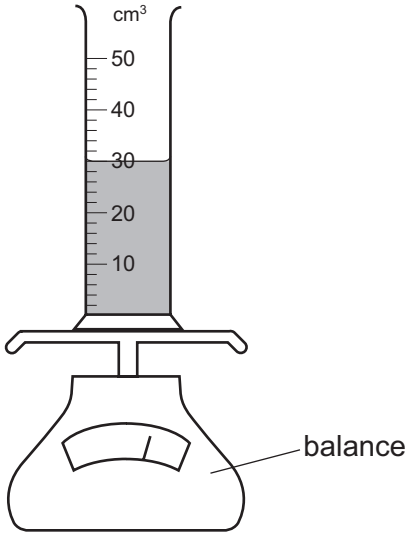
The gravitational field strength on the Earth is greater than that on the Moon.

How would the measurements on the Earth compare with those on the Moon?

	spring balance measurements	beam balance measurements
A	larger on the Earth than on the Moon	larger on the Earth than on the Moon
B	larger on the Earth than on the Moon	same on the Earth as on the Moon
C	same on the Earth as on the Moon	larger on the Earth than on the Moon
D	same on the Earth as on the Moon	same on the Earth as on the Moon

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5 A measuring cylinder contains 30 cm^3 of a liquid.



Some more of the liquid is added until the liquid level reaches the 50 cm^3 mark.

The reading on the balance increases by 30 g.

What is the density of the liquid?

A 0.60 g/cm^3 **B** 0.67 g/cm^3 **C** 1.5 g/cm^3 **D** 1.7 g/cm^3

6 Which pieces of apparatus are the most appropriate for an experiment to plot an extension–load graph of a spring?

A ruler, newton meter, clamp and stand

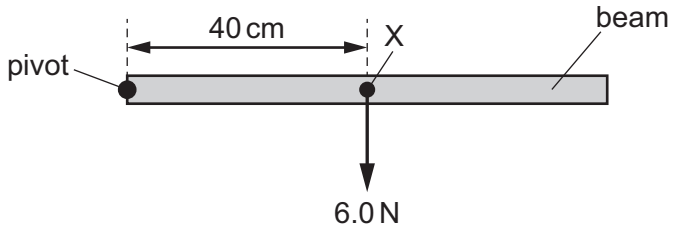
B balance, stop-watch, ruler

C light gate, ruler, newton meter

D stop-watch, balance, measuring cylinder

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7 A beam is pivoted at one end, as shown.



The beam weighs 6.0 N and its weight acts at a point X 40 cm from the pivot.

A force of 4.0 N is applied to the beam causing it to balance horizontally.

In which direction and where is the 4.0 N force applied?

A vertically downwards at 20 cm to the left of X

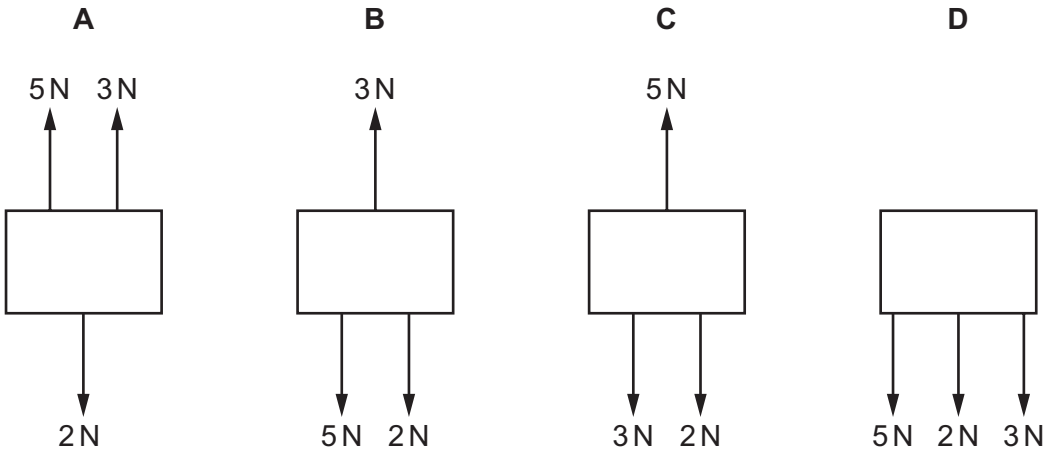
B vertically downwards at 20 cm to the right of X

C vertically upwards at 20 cm to the left of X

D vertically upwards at 20 cm to the right of X

8 The diagrams show the forces acting on four moving objects.

Which object is moving at a constant speed?



9 A mass hangs vertically from a spring.

The mass is raised to a point P and is then released.

The mass oscillates repeatedly between point P and a lower point Q.

Which energies alternately increase and decrease throughout the oscillations?

A gravitational potential energy, kinetic energy and elastic energy

B gravitational potential energy and kinetic energy only

C gravitational potential energy, kinetic energy and internal energy

D internal energy and elastic energy

10 A force F acts on an object and the object moves a distance d in the direction of the force.

What is the work done on the object?

A $\frac{F}{d}$ **B** $\frac{d}{F}$ **C** $F \times d$ **D** $\frac{1}{(F \times d)}$

11 Liquid of mass 92 kg is contained in a rectangular tank.

The area of the base of the tank is $0.23\,m^2$.

What is the pressure exerted by the liquid on the base of the tank?

A $2.5 \times 10^{-4}\,N/m^2$

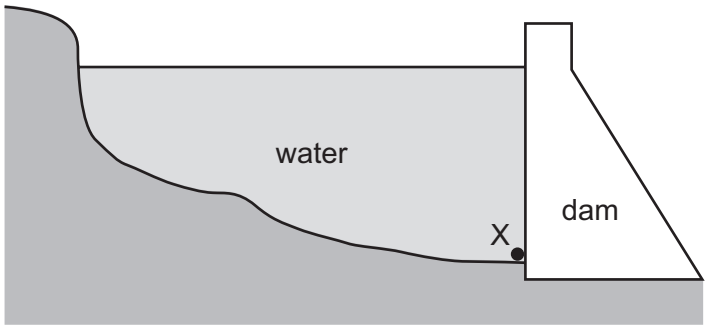
B $2.5 \times 10^{-3}\,N/m^2$

C $400\,N/m^2$

D $4000\,N/m^2$

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12 The diagram shows a deep reservoir formed by a dam.



On what does the pressure at X depend?

A the depth of the water at X

B the length of the reservoir

C the surface area of the water

D the thickness of the dam wall

13 The list gives three properties of different states of matter.

1 They cannot be compressed significantly.

2 They can flow.

3 They always completely fill their container.

Which properties are correct for liquids?

A 1 and 2 only **B** 2 and 3 only **C** 1 and 3 only **D** 1, 2 and 3

14 Two thermometers, P and Q, give the same reading at room temperature.

The bulb of thermometer Q is wrapped in gauze and dipped in a beaker of water at room temperature.

Air at room temperature is blown over the two thermometer bulbs.

Which statement correctly describes and explains what happens?

A P reads higher than Q because bulb P absorbs energy from the air.

B P reads higher than Q because water evaporates from the gauze and cools bulb Q.

C P reads lower than Q because the wet gauze insulates bulb Q.

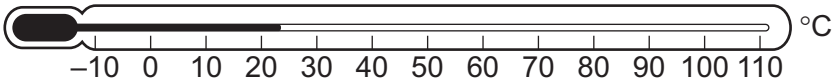
D P reads lower than Q because water evaporates from the gauze and warms bulb Q.

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15 What happens to the volumes of liquid metal and of solid metal when heated at constant pressure?

	volume of liquid metal	volume of solid metal
A	decreases	increases
B	decreases	no change
C	increases	increases
D	increases	no change

16 The diagram shows a liquid-in-glass thermometer.



A student wishes to check the marking of the upper fixed point on this thermometer.

What should she do?

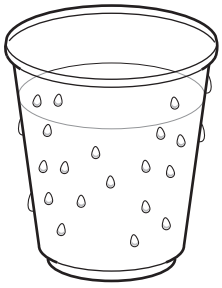
A Put the bulb in a beaker of boiling sea water.

B Put the bulb in a beaker of boiling pure water.

C Put the bulb in a beaker of ice and salt.

D Put the bulb in a beaker of pure melting ice.

17 A glass contains an iced drink on a warm and humid day. Water starts to form on the outside of the glass.



What is the name of the effect by which the water forms?

A condensation

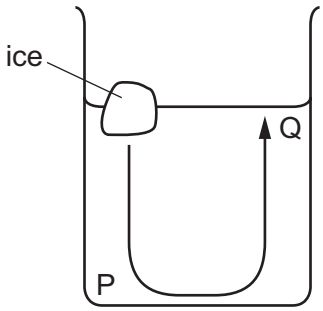
B conduction

C convection

D evaporation

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18 The diagram shows a convection current caused by a piece of ice placed in a beaker of water at room temperature.



Which row correctly compares the temperatures and densities at water points P and Q?

	temperature at P	density at P
A	higher than at Q	higher than at Q
B	higher than at Q	lower than at Q
C	lower than at Q	higher than at Q
D	lower than at Q	lower than at Q

19 The outside of one of two identical shiny metal containers is painted dull black. The containers are filled with equal masses of hot water at the same temperature.

Why does the dull black container cool more quickly?

A Black surfaces are better conductors than shiny surfaces.

B Black surfaces are better emitters of radiation than shiny surfaces.

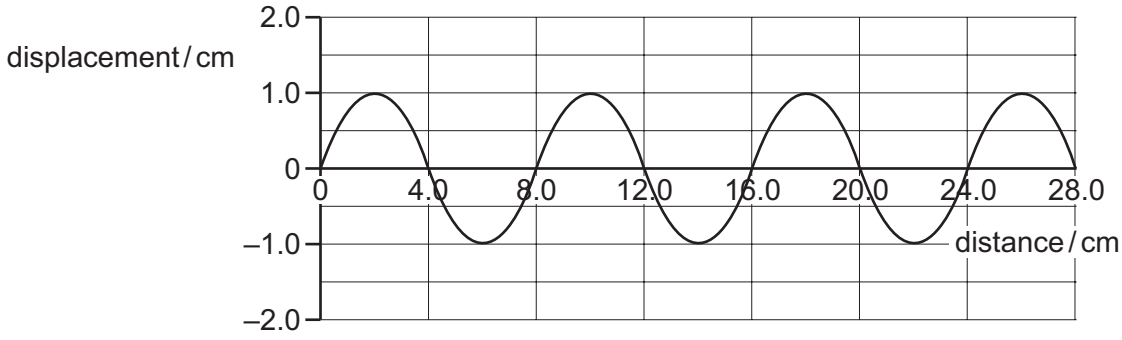
C Black surfaces are better reflectors of radiation than shiny surfaces.

D Black surfaces are worse absorbers of radiation than shiny surfaces.

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[Turn over

20 The diagram shows a wave.



Which row is correct?

	amplitude of the wave / cm	wavelength of the wave / cm
A	1.0	4.0
B	1.0	8.0
C	2.0	4.0
D	2.0	8.0

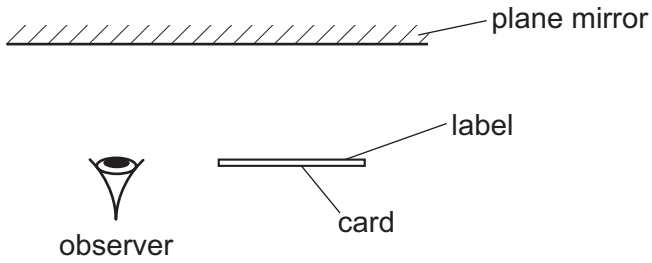
21 A girl is sitting on a rock in the sea looking at passing waves. She notices that five complete wavelengths pass her in 20 s.

What is the frequency of this wave?

A 0.25 Hz **B** 4.0 Hz **C** 15 Hz **D** 100 Hz

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22 A card is placed in front of a plane mirror so that its label is facing the mirror, as shown.



The label is shown.



How does the image of the label formed by the mirror appear to the observer?

A



B



C

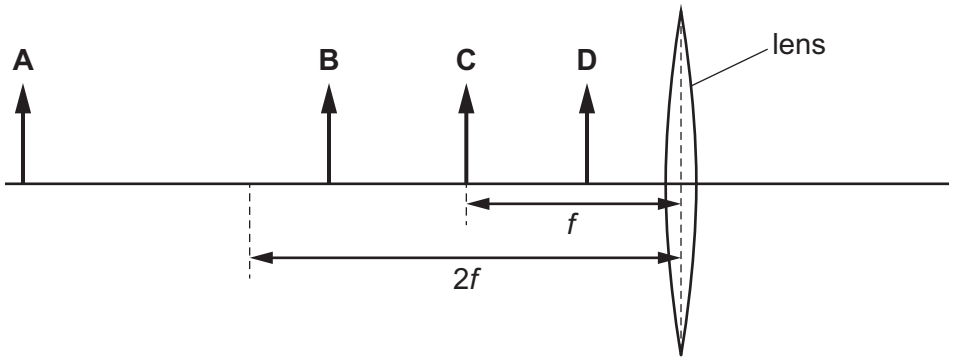


D



23 An object is placed in front of a converging lens. The lens has a focal length *f*.

In which labelled position should the object be placed in order to produce a real image that is smaller than the object?



24 Which part of the electromagnetic spectrum is used by a remote controller for a television?

A infrared waves

B microwaves

C radio waves

D visible light

25 Which statement correctly compares radio waves and X-rays?

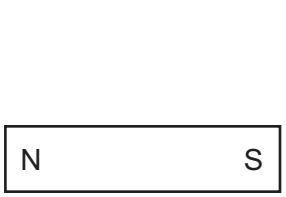
A Radio waves have a longer wavelength and a greater speed in a vacuum.

B Radio waves have a longer wavelength and the same speed in a vacuum.

C Radio waves have a shorter wavelength and a greater speed in a vacuum.

D Radio waves have a shorter wavelength and the same speed in a vacuum.

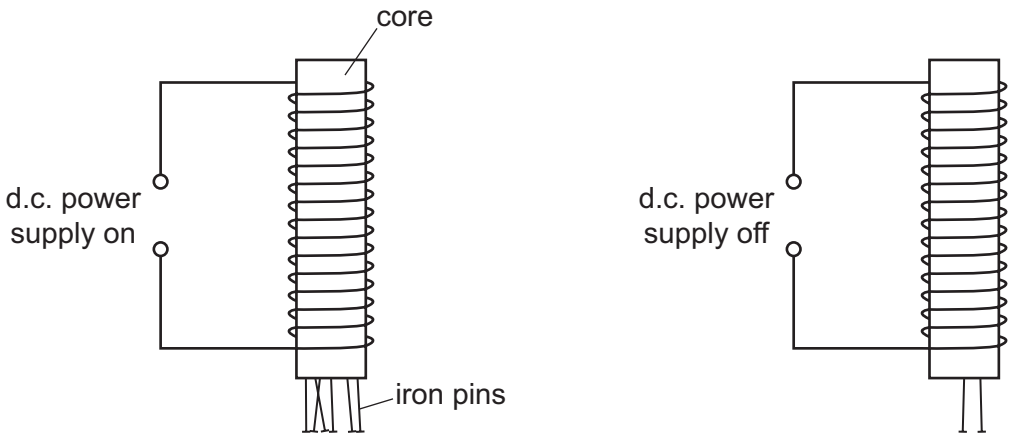
26 Point X is near to a bar magnet, as shown.



Which arrow indicates the direction of the magnetic field of the bar magnet at point X?



27 A student counts how many iron pins an electromagnet picks up when its power supply is switched on. Then, she counts how many pins are picked up when the power supply is switched off.

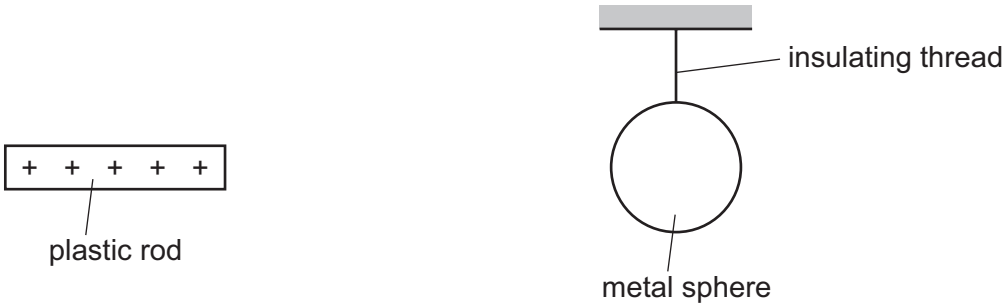


She repeats the experiment using cores made of different materials. The results are shown.

Which core is made out of soft iron?

	pins picked up with the power supply on	pins picked up with the power supply off
A	0	0
B	2	7
C	8	5
D	12	0

28 The diagram shows a charged plastic rod and an uncharged metal sphere. The metal sphere is suspended by an insulating thread.



The plastic rod is then moved close to the metal sphere.

Which row is correct?

	observation	the overall state of the metal sphere
A	The rod attracts the sphere.	charged
B	The rod attracts the sphere.	uncharged
C	The rod repels the sphere.	charged
D	The rod repels the sphere.	uncharged

29 A large battery is labelled with various items of information about the battery.

12 V	30 kg	216 kJ	680 A

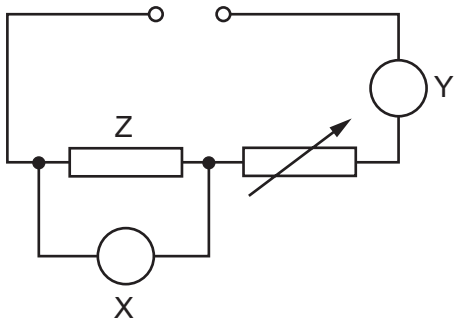
One of these items of information is the electromotive force (e.m.f.) of the battery.

What is the e.m.f. of the battery?

A 12 V **B** 30 kg **C** 216 kJ **D** 680 A

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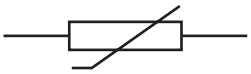
30 The circuit shown is being used to measure the resistance of resistor Z.



What is the correct combination of meters to determine the resistance of resistor Z?

	meter X	meter Y
A	ammeter	ammeter
B	ammeter	voltmeter
C	voltmeter	ammeter
D	voltmeter	voltmeter

31 The diagram shows the circuit diagram symbol of an electrical component.



Which component does the symbol represent?

A light-dependent resistor

B relay coil

C thermistor

D variable resistor

32 What is the advantage of connecting lamps in parallel in a lighting circuit?

A A smaller fuse is needed to protect the lamps.

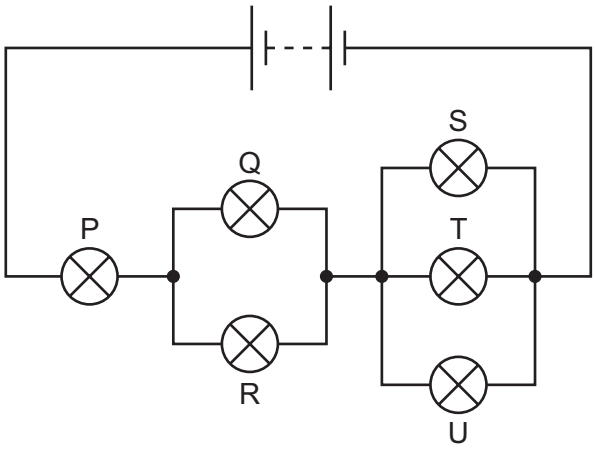
B If the filament of one lamp breaks, the remaining lamps stay lit.

C The current taken from the supply is less.

D The lamps use less power.

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33 The diagram shows a circuit of six identical lamps connected to a battery.



Which lamps are brightest?

A P only

B Q and R only

C S, T and U only

D P, Q, R, S, T and U are equally bright

34 Why is a fuse used in an electrical circuit?

A so that the current can have only one value

B to prevent the current becoming too large

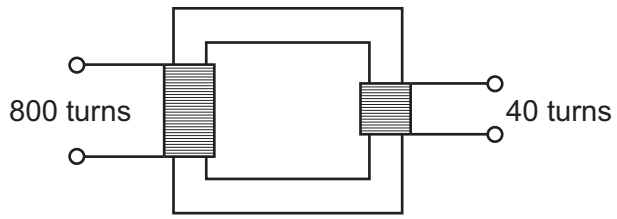
C to provide a path to earth if a fault occurs

D to save electrical energy

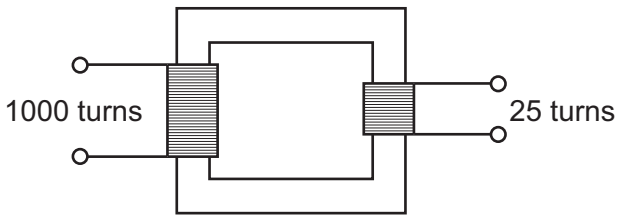
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35 Which transformer can change a 240 V a.c. input into a 15 V a.c. output?

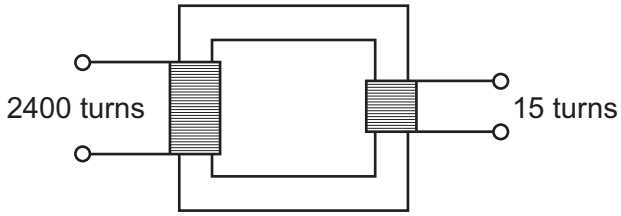
A



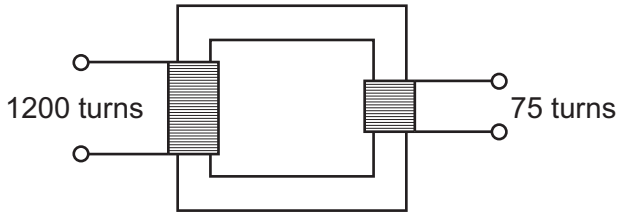
B



C



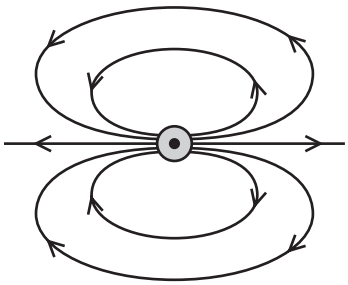
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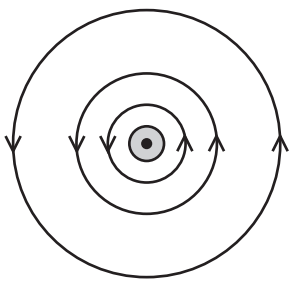
36 The diagrams show patterns around a straight wire carrying a current perpendicularly out of the page.

Which pattern represents the magnetic field due to the current in the wire?

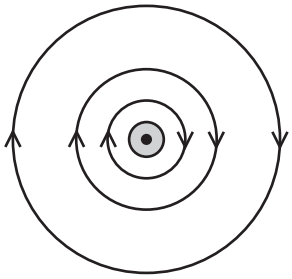
A



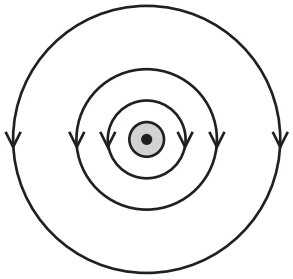
B



C



D



37 A current-carrying coil in a magnetic field experiences a turning effect.

Three suggestions for increasing the turning effect are given.

1 Increase the number of turns on the coil.

2 Increase the current in the coil.

3 Increase the strength of the magnetic field.

Which suggestions are correct?

A 1 and 2 only **B** 1 and 3 only **C** 2 and 3 only **D** 1, 2 and 3

38 A model of an atom consists of small particles orbiting a central nucleus.

Where is the positive charge in an atom?

A on the orbiting particles

B in the nucleus

C in the space between the nucleus and the orbiting particles

D spread throughout the atom

39 A radioactive source has a half-life of 0.5 hours.

A detector near the source shows a reading of 6000 counts per second.

Background radiation can be ignored.

What is the reading on the detector 1.5 hours later?

A 750 counts per second

B 1500 counts per second

C 2000 counts per second

D 3000 counts per second

40 Which statement about the radioactive decay of a substance is correct?

A It cannot be predicted when a particular nucleus will decay.

B Placing a radioactive substance inside a lead-lined box prevents it from decaying.

C The decay always produces poisonous gases.

D The rate of decay increases if the substance is dissolved in water.

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