Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

PHYSICS **0625/11**

Paper 1 Multiple Choice (Core) **October/November 2019**

45 minutes

Additional Materials: Multiple Choice Answer Sheet
Soft clean eraser
Soft pencil (type B or HB recommended)

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READ THESE INSTRUCTIONS FIRST

Write in soft pencil.
Do not use staples, paper clips, glue or correction fluid.
Write your name, centre number and candidate number on the Answer Sheet in the spaces provided unless this has been done for you.
DO **NOT** WRITE IN ANY BARCODES.

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 the instructions on the Answer Sheet very carefully.

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.
Electronic calculators may be used.
Take the weight of 1.0 kg to be 10 N (acceleration of free fall = 10 m / s^2).

This syllabus is regulated for use in England, Wales and Northern Ireland as a Cambridge International Level 1/Level 2 Certificate.

This document consists of **16** printed pages.

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1 A student measures the volume of a small irregularly-shaped stone.

Which apparatus must be used?

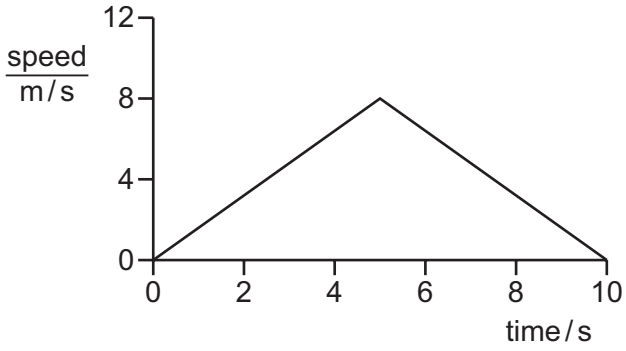
A a measuring cylinder containing water and a ruler only

B a measuring cylinder containing water only

C an empty measuring cylinder and a ruler only

D a ruler only

2 The graph shows how the speed of an object changes with time.



How far does the object travel in 10 seconds?

A 8 m **B** 10 m **C** 40 m **D** 80 m

3 A car travels at an average speed of 60 km / h for 15 minutes.

How far does the car travel in 15 minutes?

A 4.0 km **B** 15 km **C** 240 km **D** 900 km

4 Which quantity is a force due to a gravitational field?

A density

B mass

C weight

D volume

5 The density of air is 1.2 kg / m^3.

A room has dimensions 5.0 m × 4.0 m × 3.0 m.

What is the mass of the air in the room?

A 0.02 kg **B** 0.10 kg **C** 50 kg **D** 72 kg

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6 A student measures the length of a spring. She then attaches different weights to the spring. She measures the length of the spring for each weight.

The table shows her results.

weight / N	length / mm
0	520
1.0	524
2.0	528
3.0	533
4.0	537
5.0	540

What is the extension of the spring with a weight of 3.0 N attached to it?

A 4 mm **B** 5 mm **C** 12 mm **D** 13 mm

7 Which statement gives a complete description of any object that is in equilibrium?

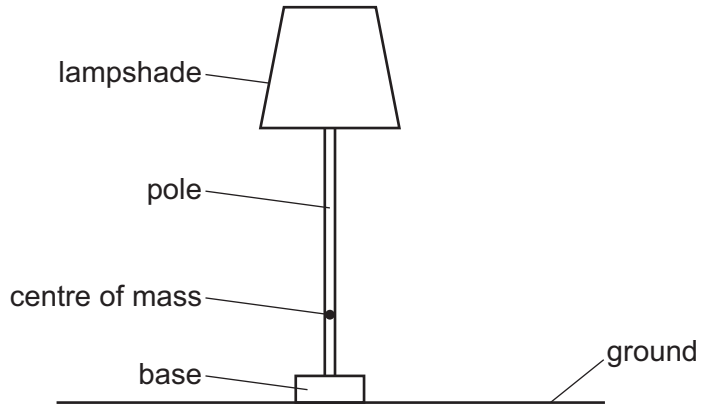
A There are no forces acting.

B There is no resultant force.

C There is no resultant force and no resultant turning effect.

D There is no resultant turning effect.

8 The diagram shows a lamp.



Changing which feature increases the stability of the lamp?

A a larger lampshade

B a longer pole

C a heavier base

D a higher centre of mass

9 Brakes are used to slow down a moving car.

Into which form of energy is most of the kinetic energy converted as the car slows down?

A chemical

B elastic

C thermal

D sound

10 Which does **not** transfer useful energy?

A emitting a sound wave

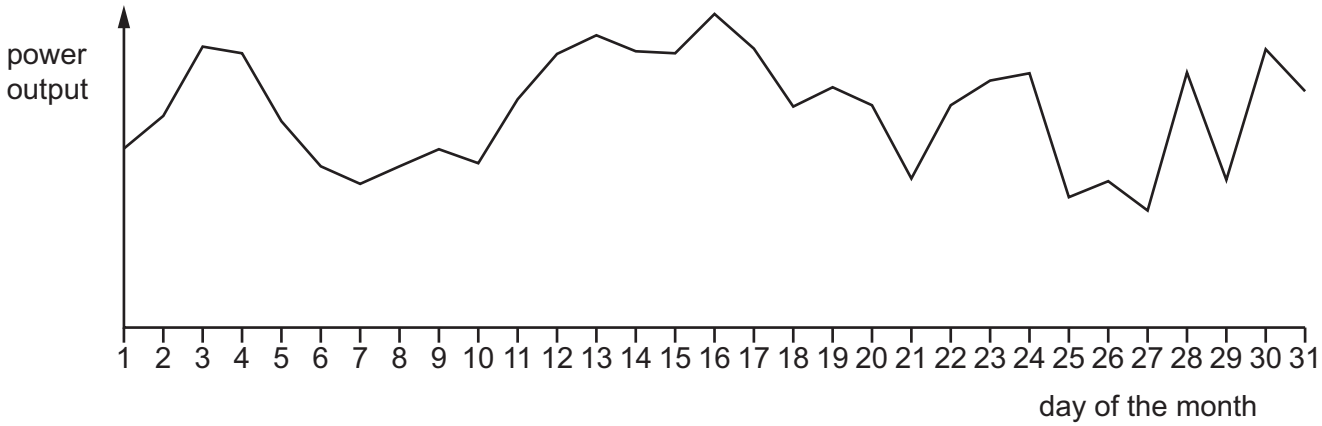
B measuring a temperature

C passing an electric current

D pushing a box along the floor

11 The power output from solar panels is recorded every day for a month.

The graph shows the output recorded.



Which conclusion can be drawn from this graph?

A The power output from the solar panels changes from day to day.

B The power output from the solar panels is cheap to produce.

C Solar panels create no pollution.

D Solar energy is renewable.

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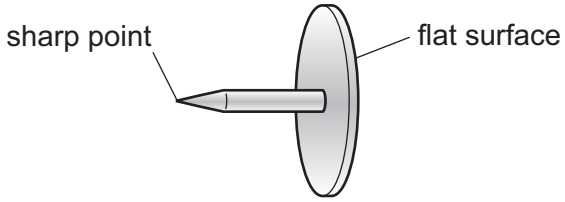
12 A drawing pin (thumb tack) has a sharp point at one end and a flat surface at the other end.



The pin is pushed into a wooden board.

How do the pressure and the force at the sharp point compare with the pressure and the force on the flat surface?

	force at the sharp point	pressure at the sharp point
A	greater than on the flat surface	greater than on the flat surface
B	greater than on the flat surface	less than on the flat surface
C	the same as on the flat surface	greater than on the flat surface
D	the same as on the flat surface	less than on the flat surface

13 The table shows four forces. Each force acts on a different surface.

Which row shows the **least** pressure?

	size of the force / N	area of the surface / m^2
A	0.30	0.040
B	10	2.0
C	60	15
D	1200	40

14 A test-tube contains 1.0 cm^3 of liquid water at 100 °C. The liquid water boils to form 1600 cm^3 of steam.

What is the reason for the large increase in volume?

A Steam molecules are bigger than water molecules.

B The average distance between the molecules is much greater in the steam.

C The molecules do not move until the water turns into a gas.

D There are more steam molecules than there were water molecules.

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[Turn over

15 Which statement about the evaporation of a liquid is correct?

A The least energetic molecules escape from the surface and the temperature of the liquid decreases.

B The least energetic molecules escape from the surface and the temperature of the liquid increases.

C The most energetic molecules escape from the surface and the temperature of the liquid decreases.

D The most energetic molecules escape from the surface and the temperature of the liquid increases.

16 Which effect is caused by thermal expansion?

A a metal surface heating up in direct sunlight

B ice-cream melting on a hot day

C a railway track buckling on a hot day

D ice forming on a pond on a cold day

17 A liquid-in-glass thermometer uses a change in a property of a liquid to measure temperature.

Which property is used?

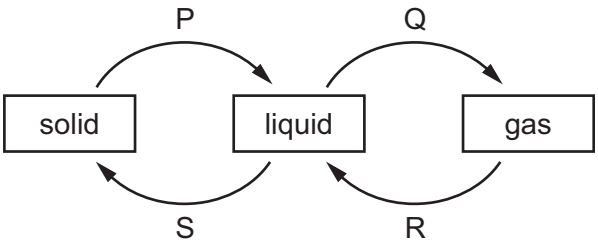
A mass

B thermal capacity

C volume

D weight

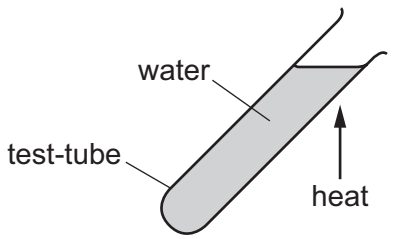
18 The diagram shows four labelled changes of state between solid, liquid and gas.



Which changes need an energy input?

A P and Q **B** Q and R **C** R and S **D** S and P

19 A glass test-tube containing water is heated at the top. The water at the top boils, but the water at the bottom remains cold.



Which row explains why the water at the bottom of the test-tube remains cold?

	glass	water
A	good thermal conductor	good thermal conductor
B	good thermal conductor	poor thermal conductor
C	poor thermal conductor	good thermal conductor
D	poor thermal conductor	poor thermal conductor

20 In countries where it is usually hot, houses are often painted white.

What is the reason for this?

A White surfaces are good reflectors of radiant energy.

B White surfaces are good transmitters of radiant energy.

C White surfaces are good absorbers of radiant energy.

D White surfaces are good emitters of radiant energy.

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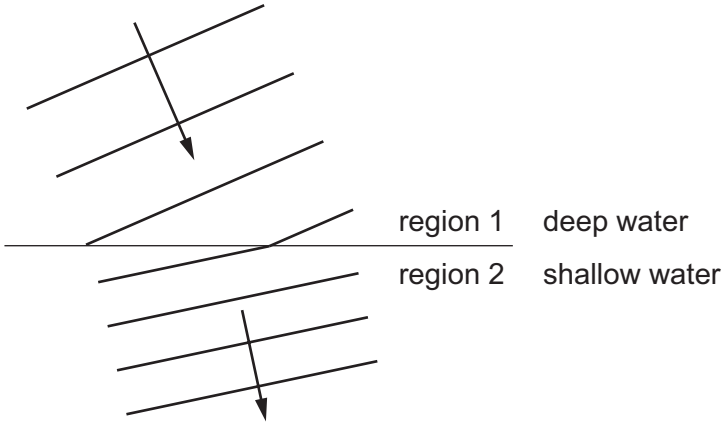
[Turn over

21 The diagram shows wavefronts on the surface of water, viewed from above.



Which row is correct for the wavefronts moving from region 1 to region 2?

	name of process	the speeds of the wavefronts in regions 1 and 2 are
A	diffraction	different
B	diffraction	the same
C	refraction	different
D	refraction	the same

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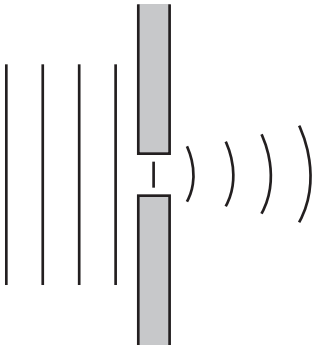
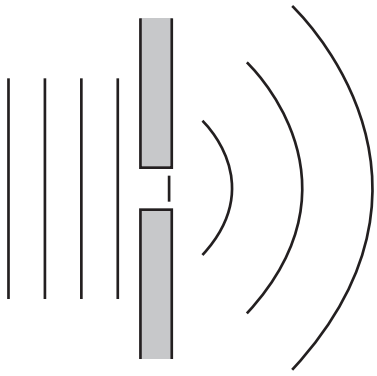
22 Plane water waves approach a narrow gap in a barrier.

Which diagram shows the diffraction pattern that would occur?

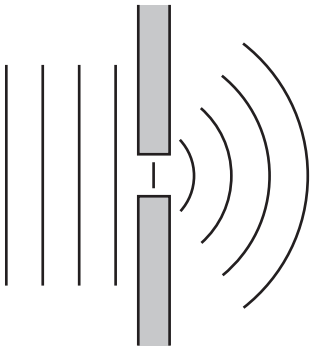
A



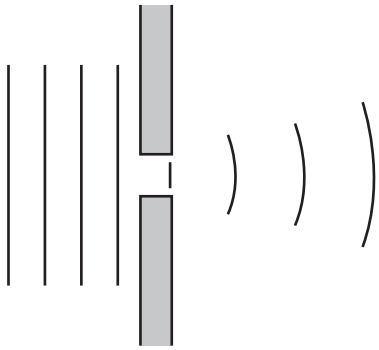
B



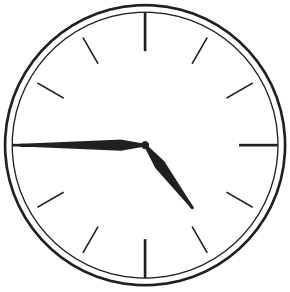
C



D



23 The diagram shows the image of a clock in a plane mirror.



Which is the actual time?

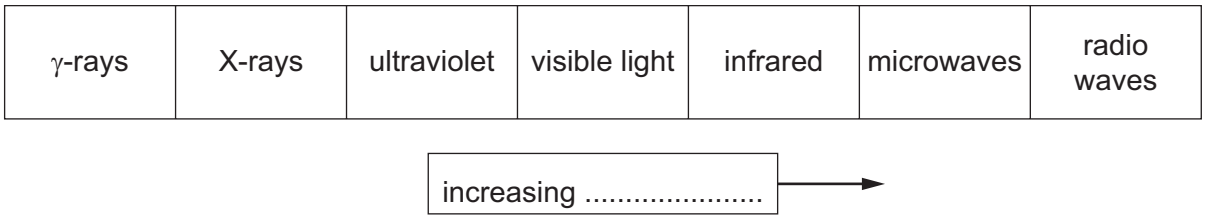
A 04:15 **B** 04:45 **C** 07:15 **D** 07:45

24 Total internal reflection may occur when light reaches an air-glass boundary.

Under which conditions is light totally internally reflected?

	medium in which light travels towards the boundary	angle of incidence
A	air	greater than the critical angle
B	air	less than the critical angle
C	glass	greater than the critical angle
D	glass	less than the critical angle

25 The diagram shows the electromagnetic spectrum.



A word is missing from the label below the spectrum.

Which word is missing?

A amplitude

B frequency

C speed

D wavelength

26 A man hears a starting pistol fire 1.5 seconds after he sees a puff of smoke from the pistol. The sound and the smoke are made at the same time. The starting pistol is 450 metres away from the man.

What is the speed of sound calculated from this observation?

A 150 m / s **B** 300 m / s **C** 330 m / s **D** 625 m / s

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27 A student has a bar magnet. He brings the magnet close to an object. The magnet and the object repel each other.

What must the object be?

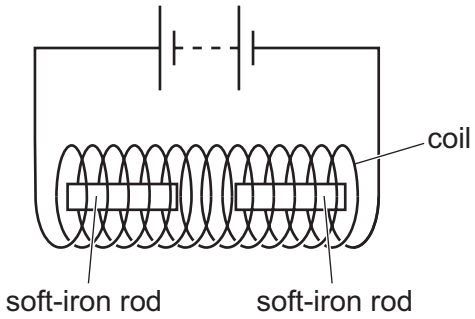
A another permanent magnet

B any magnetic material

C a block of wood

D a piece of copper

28 Two soft-iron rods are placed end-to-end inside a coil. The coil is connected to a battery.



The connections from the battery to the coil are now reversed.

What happens to the soft-iron rods in each case?

	battery connections as shown	battery connections reversed
A	rods attract	rods attract
B	rods attract	rods repel
C	rods repel	rods attract
D	rods repel	rods repel

29 A plastic rod is rubbed with a dry cloth. The rod becomes positively charged.

Why has the rod become positively charged?

A It has gained electrons.

B It has gained neutrons.

C It has lost electrons.

D It has lost neutrons.

30 A teacher asks her class “What quantity can be recorded in volts?”.

Student 1 says “The potential difference across a resistor”.

Student 2 says “The rating of a fuse”.

Student 3 says “The electromotive force of a battery”.

Which students are correct?

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

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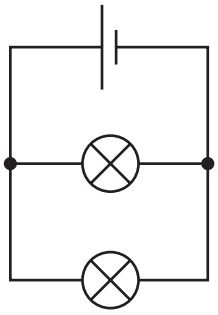
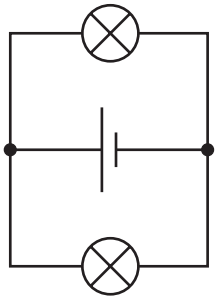
31 The circuit shows two lamps connected to a d.c. supply.



The same lamps and power supply are arranged in different ways, as shown.

P



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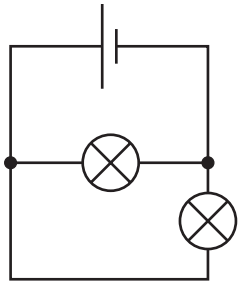
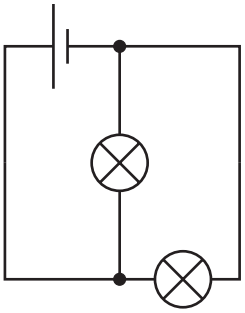


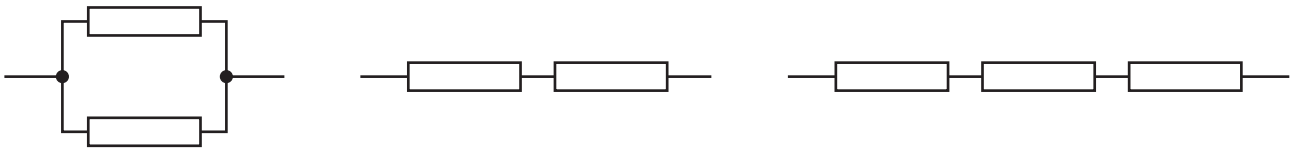
R



In which circuits will the lamps be the same brightness as in the original circuit?

A Q only **B** P and Q only **C** P and R only **D** P, Q and R

32 Identical resistors are connected together to form arrangements X, Y and Z.



X Y Z

What is the correct order of the resistances of the arrangements from the largest to the smallest?

A $X \rightarrow Y \rightarrow Z$

B $Y \rightarrow X \rightarrow Z$

C $Z \rightarrow X \rightarrow Y$

D $Z \rightarrow Y \rightarrow X$

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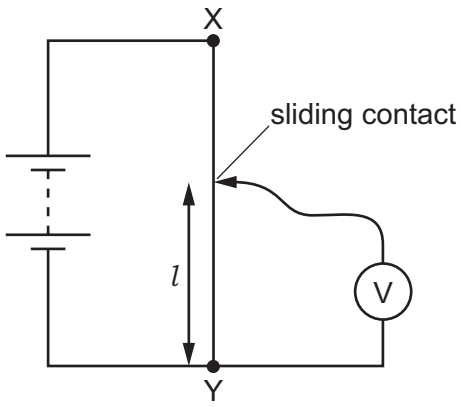
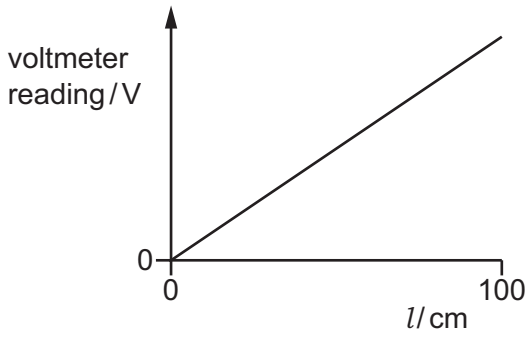
33 A student uses 100 cm of resistance wire XY in a circuit to make a potential divider.



He changes the length of wire l by moving the sliding contact along the resistance wire.

Which graph shows how the voltmeter reading changes as the length of wire l is increased from zero to 100 cm?

A



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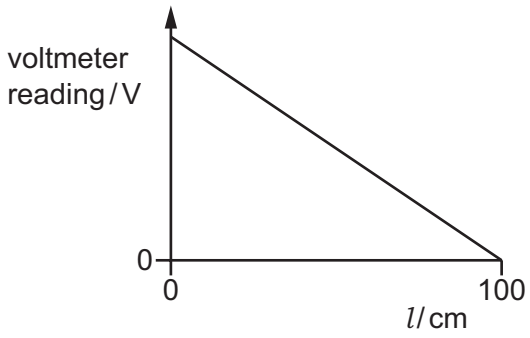

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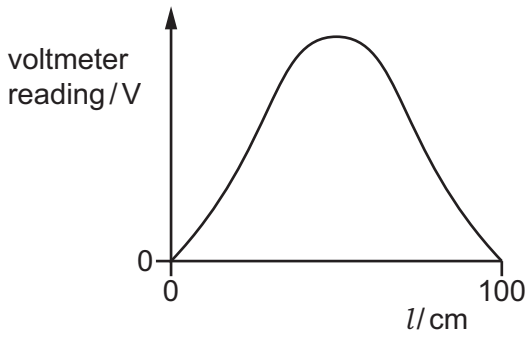
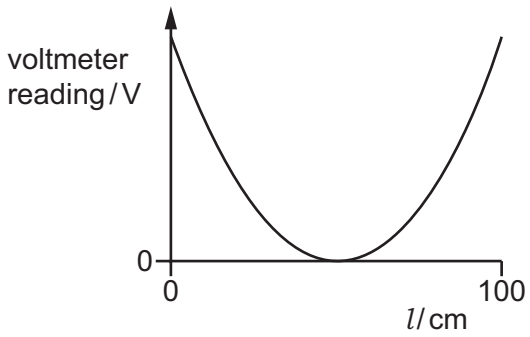


D



34 Where must a fuse be connected in a mains electric circuit?

A the earth wire only

B the live wire only

C the neutral wire only

D the live wire and the earth wire

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35 A student investigates the output voltage induced across a coil of wire by a bar magnet.

When will the induced voltage have the greatest value?

A The student slowly moves the bar magnet into the coil of wire.

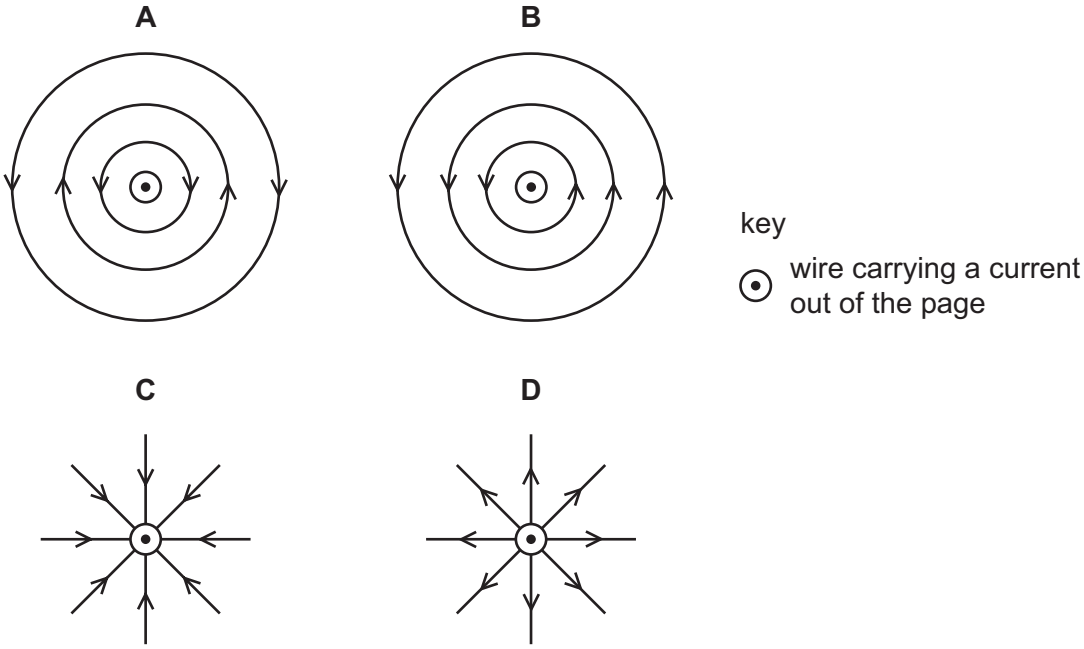
B The student leaves the bar magnet stationary in the coil of wire.

C The student quickly removes the bar magnet from the coil of wire.

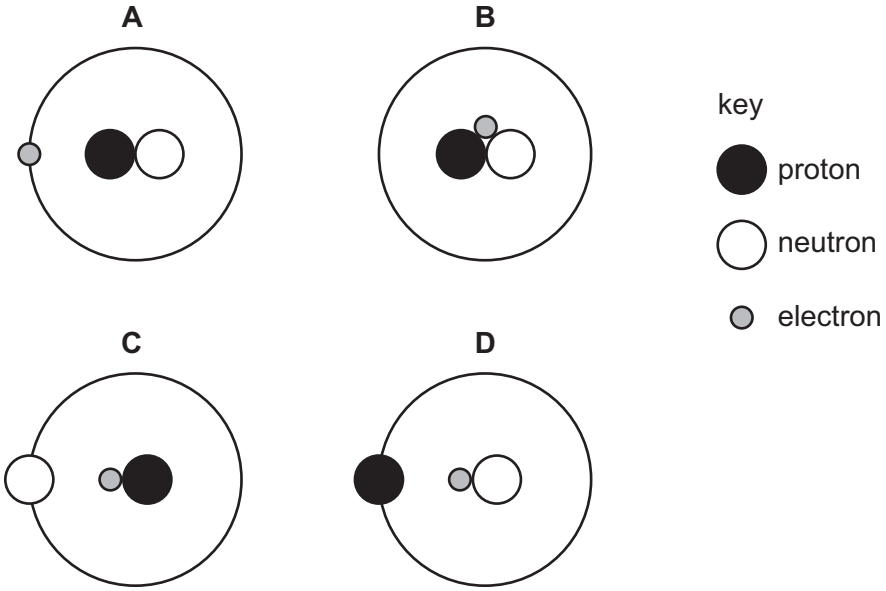
D The student places the bar magnet at rest outside the coil of wire.

36 There is a current in a wire. The direction of the current is out of the page.

Which diagram shows the magnetic field pattern produced?



37 Which diagram shows a possible structure of a neutral atom?



38 A nuclide of cobalt contains 27 protons and 32 neutrons.

Which symbol represents this nuclide?

A $^{27}_{59}Co$ **B** $^{32}_{27}Co$ **C** $^{32}_{59}Co$ **D** $^{59}_{27}Co$

39 An isotope of radon is radioactive. It decays by emitting an α-particle.

What happens to the nucleus of a radon atom during the emission of the α-particle?

A It becomes the nucleus of a different isotope of radon with fewer neutrons.

B It becomes the nucleus of a different isotope of radon with more neutrons.

C It becomes the nucleus of an element with a higher proton number.

D It becomes the nucleus of an element with a lower proton number.

40 Why are some radioactive sources stored in boxes made from lead?

A Lead absorbs emissions from the radioactive sources.

B Lead decreases the half-life of radioactive sources.

C Lead increases the half-life of radioactive sources.

D Lead repels emissions from the radioactive sources.

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